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The Government and Transport

SINCE the present Government was returned to power there has been a good deal less public discussion by members of the Conservative Party of their plans for dealing with the transport problem. It was probably a wise move to select Ministers responsible for transport from other than those who had committed themselves publicly on matters of policy. There is little doubt that, during the period before Parliament resumes, a great deal of thought is being given in ministerial circles to the steps which may be necessary to cope with the transport situation in this country. That the Government is unlikely to be satisfied either with the present organisation in detail, or the financial results of the State-owned industry, hardly needs saying. On the other hand, emergence from Opposition to office may well have brought a clearer recognition of some of the difficulties and dangers inherent in any hasty action at the present juncture. There has probably been an awakening to the fact that there is no ready palliative or panacea for the present ills of the industry. So many varying cures have been proposed since the beginning of 1948 that the Government may well feel disposed to undertake a fairly exhaustive diagnosis of the case before putting forward its own remedy. Nothing is to be gained and a great deal may be lost by precipitate action, more especially if it is based on political rather than practical considerations. It is possible that this point of view is gaining weight with the Government and that, before committing itself to a line of action, it will undertake a careful review of the present organisation and operation of British

transport as a whole. It may even become necessary for it frankly to admit the impracticability of some of the approaches to the problem which it had outlined before the election and which, if applied piecemeal, could not but have unfortunate effects on the State transport undertaking generally. Above all, it is essential that any plan put forward by the Government should be based on long-term considerations and should have as its basis the ultimate well-being and greater efficiency of the whole transport organisation which in turn would achieve the greatest benefit to the public and traders of the country. This must be the over-riding consideration rather than any sectional interest. Moreover, it would be disastrous if British transport were to become the plaything of politics and were to be subject to party influence with every change of Government. The inclusion of civil aviation in the Minister of Transport's functions is a wise move in view of the increasing effect the development of the airlines is having on the higher rated traffics of land transport.

F.B.I. Dividend Policy

THE President of the Federation of British Industries, Sir Archibald Forbes, after discussing the economic situation with Mr. R. A. Butler, Chancellor of the Exchequer, and Sir Arthur Salter, Minister of State for Economic Affairs, last week, with the approval of the F.B.I. Grand Council, addressed a letter to members of the Federation recommending "moderation and restraint" in the distribution of profits. The letter states that the ultimate remedy for the present economic ills—including inflationary tendencies—is increased production; but there also must be reduction in internal spending, in which the Government could set an example. Although, it is pointed out, more restraint has been exercised in the distribution of profits than in most other fields, and the inflationary effects of increases in dividends would be negligible, industry must act with moderation, especially as there is to be no statutory control of dividends. The difficulty is stressed of conserving industrial capital under heavy taxation, and it is recommended that the extent to which profits are used to provide for replacement of assets be shown in published accounts, to avoid misrepresentation. Large increases in dividend distribution are likely to intensify inflation by stimulating further wage demands. The amount of profits distributed "is a matter for each board—in the light of all relevant circumstances."

Further Diesel Shunters for British Railways

THE Railway Executive has announced its plans to add 573 diesel shunting engines to the present fleet of 130 during the five years 1953-57. In addition, 84 already have been authorised. The plan presumably is that submitted some weeks ago for approval by the British Transport Commission, as recorded in our issue of November 16. It is the result of special investigation into the shunting engine position in all Regions, which showed clearly that economies could be obtained and efficiency increased by dieselisation in many of the larger marshalling yards and goods depots and on dock sidings, where employment is continuous. The provision of 573 diesels will enable 635 life-expired steam locomotives to be scrapped, but progress in implementing the plan depends on the permissible level of investment expenditure, steel supplies, and manufacturers' ability to provide diesel engines and transmission equipment. The plan provides for 432 diesel-electric engines of 350 h.p. and 141 diesel-mechanical engines of 150-200 h.p. As a first instalment, 57 of the former and twelve of the latter are to be included in the 1953 locomotive renewal programme. Construction of the balance of the 141 diesel-mechanical will be subject to the performance of the first twelve locomotives in traffic conditions. The diesel-electric locomotives will be of the 0-6-0 type, and there will be two types of diesel-mechanical, namely, 0-4-0 of 150 h.p. and 0-6-0 of 200 h.p. Main frames, wheels, cab structure, and mechanical parts will be built in British Railways workshops, and the diesel engines and electrical transmission equipment purchased from contractors.

C.P.R. Capital Needs

THE average annual capital requirements of the Canadian Pacific Railway are about \$80,000,000. At present the company puts about \$20,000,000 a year from current earnings into its depreciation fund, but because of the rising cost of replacing equipment another \$30,000,000 a year will have to be set aside. Yet another \$30,000,000 are needed to keep the system abreast of national development. In declaring these figures to the Board of Transport Commission during the hearing of an application for a further general freight rate increase of 10 per cent. Mr. N. R. Crump, Vice-President of the C.P.R., said that capital outlay on diesel power would necessarily be large but increased efficiency and savings to the railway and the consignor would ultimately result. Any savings from the introduction of diesel traction have so far been more than wiped out by rises in costs. Mr. Crump thought that perhaps the best that could be hoped for in the immediate future was that the savings under this head would partly offset further increases in costs.

Overseas Railway Traffics

DURING the fortnight ended November 17 South African Railways traffics made a further advance by £349,294 over receipts for the corresponding period of last year and on the aggregate for the current 33 weeks had made a £7,164,104 improvement to £62,860,503. Traffics for the first week under review amounted to £1,939,379, and in the week ended November 17 were £2,047,859. The improvement in Tatal receipts continued during November, though on a smaller scale than in other recent months. Total traffics since July 1 amounted to \$10,120,000, as compared with \$7,821,700 for the same 22 weeks of the previous financial year. Receipts for November, which were \$2,177,000, contributed \$155,600 to the aggregate advance. Salvador traffics during October were up by C.27,000 at C.114,000 and aggregate receipts for the 18 weeks amounted to C.495,000, as compared with C.355,000 for the same period of 1950-51.

Seventy-five Years of the Wagons-Lits Company

THE success in the 1860's of sleeping cars in the U.S.A. led Georges Nagelmackers, a Belgian engineer, to build, in 1872, the first sleeping car on the continent of Europe, a four-wheel vehicle weighing thirteen tons. In 1873, he founded at Liège a company to operate similar cars between Paris and Ostend, Cologne, and Vienna. This prospered, and on December 4, 1876, Nagelmackers founded the "Compagnie Internationale des Wagons-Lits"—which soon afterwards added to its title the words "et des Grands Express Européens"—with a capital of 4,000,000 Belgian francs; King Leopold II of the Belgians was a principal shareholder. In the 75 years since its foundation the International Sleeping Car Company has grown into the widespread organisation that today provides sleeping, Pullman, and restaurant car services over railways ranging from Finland to the Congo and from London to Baghdad. By providing a high standard of comfort, it has revolutionised travel; and in inaugurating international expresses, of which the "Orient Express," dating from 1883, was the first, it has been a pioneer in developing land travel in Europe and the Middle East—and even, before 1917, to the Far East via Siberia. The company has not ceased to provide ever increasing degrees of comfort and to adapt itself to changing demands, as in the provision of third class sleeping cars and of buffet facilities in trains.

Transport and its Influence on Mankind

THE extent to which transport has played a vital part in the history of the human race was reviewed by Mr. F. J. Wymer, Assistant Chief Regional Officer, Southern Region, British Railways, at the meeting of the Southern Region Lecture & Debating Society held on December 11. For several thousands of years, the whole life of mankind has been largely conditioned by the means that he has

evolved for the carriage of himself and his goods. The invention of the wheel, which so profoundly affected the distribution and wellbeing of man, has not been recorded, but there is evidence to suggest that this great step forward was achieved no more than a few thousand years ago, in one of the early civilisations. The age of mechanical transport, a growth of the past 150 years, is typified by the railway, which has transformed social and economic conditions throughout the world. Although during the past three decades its position has been challenged seriously by mechanical road transport, and, to a lesser extent, by the aeroplane, the railway remains a vital factor in modern civilisation. Nowhere is this more clearly illustrated than in London, where passenger traffic on a scale undreamed of a century ago is carried daily between the central area and the suburbs.

Automatic Signalling on German Main Line

ALTHOUGH applied before the 1914-18 war on the Berlin Elevated and in very special form, on the Wuppertal suspended railway, and also later on the Berlin suburban and Hamburg elevated lines, automatic signalling has only recently been adopted for a main line in Germany on a 13-km. section between Bebra and Cornberg, on the important north-south trunk route from Hamburg and Hanover to Frankfurt and Munich. The line is steeply graded and has many curves. The installation is noteworthy in that the tracks are signalled for both directions of movement with remote control of points, crossovers, and signals, as are certain sections of the Paris-Dijon electrified main line of the French National Railways. The result is an increase in the traffic capacity of the section of 70 per cent. It is announced in the official *Bundesbahn Mitteilungen* that this equipment was brought into regular service on October 8, when a formal ceremony was conducted by Herr Höpken, President of the Kassel Divisional Management, and a demonstration given of an express overtaking a freight train at speed.

A Plain Case of Human Failure

THE accident at Dalguise on August 1, 1951, was a plain case of failure on the part of a driver, who could not explain how he forgot that he had not been given the tablet for the section ahead and did not see that the starting signal was at danger. As will be seen from our summary in this issue of Colonel D. McMullen's report, the driver's attention was directed to looking to see if a party of school-boys had closed all the doors, they having caused him much anxiety during the journey by changing compartments at stations. He thought this had made him start the train without thinking about the tablet or the signal. An officers' special, approaching from the other direction, was running correctly under clear signals. Colonel McMullen points out that this is only the second case in Britain since the serious collision at Abermule, on the former Cambrian Railways, on January 26, 1921, of a passenger train meeting another train head-on in a single-line section. The other took place near Fishguard on July 11, 1951.

Abermule was Gross Carelessness

THE Abermule collision, which caused 17 deaths, differed from the one at Dalguise in that the train at fault was carrying the tablet applying to the section in rear, which had been handed back to it by the stationmaster as a result of a misunderstanding between him and another member of the station staff, more than one of whom had been allowed to interfere with the tablet working. The driver did not look at the wording on it, and the starting signal had been lowered on the stationmaster's orders by a signalman, who was greatly to blame. The tablet instruments were in a special room leading off the booking office and not interlocked with the signals. No proper lookout was being kept on the departing engine, which was seen steaming almost to the last, and its crew were killed. Those on the oncoming express were keeping a good watch ahead and leapt off just before the accident.

Rectifier Locomotives

IN a recent article in this journal on "Rectifiers in Traction" it was suggested that the use of rectifiers to enable electric rolling stock to be run from 20,000 volts single phase a.c. was an attractive proposition in as much as control is very simple, but that such equipment would have little advantage over that using 50 cycles a.c. commutator motors. The results of tests in America, France, and Germany go far to confirm this view. A contributor in this issue considers some of the problems which arise in the design of a rectifier locomotive. He makes the point that the system which seems at first sight to combine with an ideal simplicity the good features of single-phase high voltage a.c. and d.c. of traction motors—alternating current fed to a rectifier through a transformer giving voltage control, and the rectified output fed to d.c. motors—requires in practice much modification of these basic principles. Nevertheless he concludes that the rectifier locomotive has its own sphere of action, where it is superior to the "direct-motored" 50-cycle locomotive.

Rail Competition from Airways

AFTER the first world war the intensive development of the internal combustion engine and the wartime training of many men in dealing with it was soon reflected in the growth of road competition with the railways. That problem increased in intensity right up to the outbreak of the second world war. It had reached a pitch in 1938 and 1939 which had forced the railways to launch the "square deal" campaign. Even Parliament at the time had become aware of the seriousness of the position and had agreed to introduce legislation which had to be deferred indefinitely because of the commencement of hostilities.

It would not be true to say that the railways were unaware, even in the early years, of the menace to their prosperity which was inherent in the advent of the newer form of transport. Parliament, however, was reluctant to give the railway companies the powers which they sought at a reasonably early stage to enter the road transport business, and, by the time these powers were secured, the railways were faced with a well-established competitive industry. Since that time one of the most serious difficulties facing transport in this country has been to evolve any scheme of co-ordination or integration of rail and road. This is still a major aim of the present nationalised transport system of this country.

In recent years another competitor for the highest-rated freight and passenger traffic has appeared. There has been a considerable development in air services and a good deal of valuable traffic has been diverted from the railways. The growth of internal airlines and of those which serve nearby territories involving a sea crossing is not a matter which the administration of British Railways can afford to take lightly. It is not possible to measure statistically the loss of first-class passenger travel which has been suffered by British Railways as a result of air services to such places as Holland, France, the Channel Islands, Ireland and even Scotland. The British Railways routes serving these places in general represent valuable streams of traffic, either as purely railway transport or in conjunction with railway-owned steamship services.

Some indication, however, of the number of first-class passengers which might be carried by the railways if the airlines did not exist is given by the following figures which relate to the number of passengers carried by all airlines through the twelve months to March 31, 1951. It will be seen that in several instances the numbers are considerable. Generally, they represent travel over routes on which the corresponding railway service is of considerable length, and consequently valuable.

From	To	
London, Liverpool, Manchester...	Isle of Man ...	29,000
London and Southampton ...	Channel Islands ...	53,000
London ...	Glasgow ...	16,000
London ...	Belfast ...	21,000
London ...	Dublin ...	112,000
London ...	Paris ...	146,000
London ...	Amsterdam ...	34,000
London ...	Geneva and Zurich ...	18,000

It will be seen that the heaviest traffic is on the London-Paris route where it is directly competitive with the Southern Region services including the "Golden Arrow" and similar well-known trains, and London-Dublin, where it is competitive with London Midland Region.

At a time when railway charges are still tending upwards, it is not without interest to note some of the means by which the airlines are endeavouring to make their services more attractive, particularly during off-season periods. One example of this is the recent introduction by Aer Lingus on the Dublin run of "Hotelfares." Under this plan travellers between London and Dublin are offered their return travel plus four days full accommodation in any one of the five best hotels in and about Dublin for an inclusive charge of £17 2s. with corresponding lower rates from such centres as Birmingham, Bristol, Glasgow, Liverpool and Manchester. These hotelfares specifically exclude the Christmas period and end on April 10, 1952, before the Easter holiday travel. The very low charge, coupled with the saving of time in travel must have an appeal, perhaps particularly to business men and other short-term visitors. Next autumn British European Air Services and Air France are to introduce tourist fares between London and Paris and some estimates suggest that the charges may be as low as £5 10s. single and under £10 return.

Apart from the regular air line services, those of the air-charter companies must be considered formidable competitors, especially during the summer periods of intensive travel. During the last holiday season, for example, it is well known that some of the charter companies did a very busy and highly lucrative trade with the Channel Islands and such continental resorts as Le Touquet. In the existing strained circumstances of British Railways it is not easy to see what reply can be made to this form of competition. Nevertheless, it is sufficiently serious in its potentialities to merit careful study. There seems little possibility of achieving advantage for rail on the basis of charges in the foreseeable future. Reliability of timekeeping and additional passenger amenity may go some way towards overcoming the advantage that the air must always have in trip-speed.

British Transport Commission Traffic Receipts

THE only receipts shown in the British Transport Commission advance figures for Period 12 (to December 2) which are down on the corresponding figure for 1950, are those for London Transport trolleybuses and trams, because of the replacement by buses of further tram services in South London.

	Four weeks to December 2		Incr. or decr.	Aggregate for 48 weeks		Incr. or decr.
	1951	1950		1951	1950	
British Railways—						
Passengers ...	£000 6,201	£000 6,033	+ 168	£000 98,811	£000 98,478	+ 333
Parcels, etc., by passen- ger train ...	2,595	2,501	+ 94	30,439	28,248	+ 2,191
Merchandise & livestock ...	8,527	7,806	+ 721	91,712	81,913	+ 9,799
Minerals ...	3,246	2,804	+ 442	33,635	30,010	+ 3,625
Coal & coke ...	7,696	6,770	+ 926	84,079	71,699	+ 12,380
	28,265	25,914	+ 2,351	338,676	310,348	+ 28,328
Road Passenger Transport : Provincial & Scottish—						
Buses, coaches & trolley- buses ...	2,965	2,557	+ 408	40,189	35,509	+ 4,680
London Transport—						
Railways ...	1,234	1,220	+ 14	14,821	13,454	+ 1,367
Buses & coaches ...	2,603	2,333	+ 270	31,133	28,507	+ 2,626
Trolleybuses & trams ...	714	799	- 85	8,924	9,754	- 830
	4,551	4,352	+ 199	54,878	51,715	+ 3,163
Inland Waterways—						
Tolls ...	68	61	+ 7	804	692	+ 112
Freight charges, etc. ...	78	66	+ 12	861	782	+ 79
	146	127	+ 19	1,665	1,474	+ 191
Total ...	35,927	32,950	+ 2,977	435,408	399,046	+ 36,362

British Railways passenger receipts show an increase of some 2.7 per cent. over last year's figure, for which there is no clear explanation, as the London Passenger Charges Scheme was in force both last year and this, and no Festival of Britain traffic is involved; troop movements, and some return of traffic due to the high cost of private motoring, may have helped. London Transport railways showed a slight increase over the corresponding period of last year, but bus and coach receipts were some 11.5 per cent. up.

The aggregate figures for 48 weeks show a very slight increase over 1950 in British Railways passenger takings—surprisingly small in view of the Festival of Britain and of troop movements such as those of reservists during the summer. There was a rise of 9.2 in London Transport bus and coach, and of 10.1 per cent. in Underground receipts, to which the Festival no doubt contributed, though there has been a steady rise in business traffic as well.

British Railways merchandise receipts for the period were 9.2 per cent. up on last year, which in the light of the 10 per cent. rise in rates last April shows a decrease in a traffic particularly susceptible to road competition. The increases of 15.7 per cent. in mineral, and in 13.6 per cent. in coal traffic receipts are due respectively to increased industrial activity and partly to increased output from the mines.

The latter is shown also in the aggregate for coal receipts for Periods 1-12, which show an increase of some 17.2 per cent. over last year. In view, however, of the re-orientation of coal dispatches, coal receipts to some extent must have been affected by increased mileages, which only an analysis of traffic can show; the diversion of coal trains to relieve congestion at certain points, notably in traffic from South Wales and from the North to the West, to which we referred in an editorial article in last week's issue, certainly added to coal train mileage compared with last year.

PERCENTAGE VARIATION 1951 COMPARED WITH 1950

	4 weeks to December 2	48 weeks to December 2
British Railways—		
Passengers ...	+ 2.7	+ 0.3
Parcels ...	+ 3.7	+ 7.7
Merchandise & livestock ...	+ 9.2	+ 11.9
Minerals ...	+ 15.7	+ 12.0
Coal & Coke ...	+ 13.6	+ 17.2
Total ...	+ 9.0	+ 9.1
Road Passenger Transport ...	+ 15.9	+ 13.9
London Transport—		
Railways ...	+ 1.1	+ 10.1
Buses & coaches ...	+ 11.5	+ 9.2
Trolleybuses & trams ...	+ 10.6	+ 8.5
Total ...	+ 4.5	+ 6.1
Inland Waterways ...	+ 14.9	+ 12.9
Aggregate ...	+ 9.0	+ 9.1

Lighting Schemes for Railway Sidings

IN these days it is more important than ever that work in yards and sidings should not be slowed up by longer hours of darkness. The lighting of such areas, whether on railway or private property, usually must be planned so as to entail the minimum obstruction of the ground with poles or columns; and often sets problems in preventing glare from the lamps being seen on nearby running lines, or interfering with work of various kinds close to the light sources but not in the area or on the plane for which the illumination scheme is designed.

By using high-power lamps the number of individual lighting units and supports for a given area obviously can be reduced. The term "artificial moonlight" is applied sometimes to installations in which groups of mercury-vapour lamps in diffracting lanterns are mounted on tall poles, as seen in the scheme at Kings Cross goods yard described in our April 30, 1948, issue. Lighting engineers justify their description of this method partly by the height of the lanterns and partly by the colour of the light from the mercury-vapour lamps.

In some areas the shape of the sidings and their surroundings make it necessary to use a more concentrated and directional form of lighting. This may be provided by means of floodlight projectors on poles or towers, and experience has shown that some floodlights, designed primarily for display purposes, serve without being modified for these railway applications. Local circumstances dictate the layout of the lights, but sometimes it is possible to arrange the supporting poles in a row parallel with the side of the sidings area, the floodlights being pointed across the tracks.

A lighting scheme of this kind, with three 1,000-W. floodlights on each 60-ft. pole, is in use at the sidings of the Vauxhall Motor Co. Ltd. alongside the Eastern Region main line near Oakleigh Park Station. No interference from the lighting is experienced on the running lines passing close to the backs of the floodlights. Wagons not illuminated directly receive some light by reflection and some direct from units pointing towards them on the more distant poles. The row of poles follows the slight curvature of the main line at this point, so that the floodlights at each end can be aligned to provide illumination between the siding tracks.

A somewhat similar arrangement has been adopted on a wharf of the Manchester Ship Canal where a wide roadway between the railway tracks must be left unobstructed for lorry traffic. Here again, a single line of floodlights on one side of the site serves the area, which itself is free from poles. There is a line of cranes on the opposite side of the wharf to the floodlights, and this has involved modifying the units so that direct light from the lamps is not seen at the level of the crane-drivers' cabs. At Willesden, L.M.R., there is a row of lighting poles at each side of the sidings, and the reflector floodlights are of a type specially designed to project the light forwards and downwards.

Another system is to arrange the lights so that their beams are parallel with the tracks, in which case narrow-beam floodlights are used, and are mounted on poles about 50 ft. high at the end of the site. Provided the range of projection is sufficient, no poles are necessary between the sidings themselves. On extensive sites a large concentration of light is necessary when long sidings have to be illuminated from one point.

An experiment in massing light sources on a lofty tower built of steel scaffolding was carried out by the Southern Railway at Hither Green in 1947 (see our November 28, 1947, issue). Previously the same railway had undertaken trials with lights suspended from a barrage balloon, a method of illumination perhaps better qualified for the description "artificial moonlight" than some schemes to which it is applied.

The latest application of the tower system has been in various sidings at the Abbey Works of the Steel Company of Wales Limited. On these sites seven 150-ft. towers have been built, each carrying a battery of 1,000-W. and 500-W. floodlights. It was necessary to have towers of this height to prevent shadows being cast across the tracks by tall buildings near the sidings. The lights on each tower are mounted on the guard rails of the top platform, and, although the ascent seems formidable to the inexperienced, once at the summit the equipment can be inspected and maintained in safety and comparative comfort. In this respect, too, the ability to deal with a number of lights at a time is in favour of the system. Day and night views of this installation are reproduced on page 718.

Discharge lamps of the mercury or sodium types are advantageous for lighting large areas out of doors, because of their high luminous efficiency. Mercury light has a greenish tinge, particularly in misty conditions, and this may call for care in siting to satisfy the signal engineers, while the yellow of sodium involves considerations of a similar nature.

The widespread use of both categories for street lighting has resulted in the development of lanterns with various forms of light distribution for mercury and sodium lamps, and it is likely that a standard product can be chosen in many cases to fulfil the requirements of a particular railway scheme.

Railway Centenaries of 1952

IN the summer of 1852 Great Britain was immersed in a General Election which, like more recent elections, was indecisive—so much so that a Coalition Government came into existence before the year was out. Robert Stephenson was Member for Whitby, Joseph Locke for Honiton, Samuel Laing for Wick, Samuel Morton Peto for Norwich, and George Hudson for Sunderland. The return of George Hudson, the erstwhile "Railway King," was a tribute to the loyalty of the electors of Sunderland, for his national prestige was at a low ebb after the slump in railway shares that had occurred during the past few years. Locke could seldom have been in the House, for he was then engaged in the construction of the line from Mantes to Caen and Cherbourg. Peto, too, was laying down a French railway between Lyons and Avignon, and was also constructing lines in the West and Midlands, and the London Tilbury & Southend Railway. Laing, the Chairman of the L.B.S.C.R., was a hero of the year for the lead he took in the campaign that saved the Crystal Palace from destruction.

The railways had need of champions in the Commons, for there has never been a period when they had a less sympathetic Parliament or a worse press. Financial losses of the past few years had exasperated those in high places, and shareholders, management, and employees alike were the subject of general vilification. The tendency to bring the multitudinous lines into groups was hotly criticised, the general basis of attack being that lessening competition would result in an indifference to human life. There was scarcely an issue of *Punch* in which railways—either collectively or individually—were not the subject of criticism that year. Bitter comments were made about poor timekeeping, indifference to the safety of passengers, and a general lack of cleanliness.

Outstanding among the railway openings of 1852 were the "towns line" of the Great Northern Railway, involving 59 miles; the completion of the South Wales Railway through to Carmarthen, 30 miles; and the entry of the Great Western Railway to Birmingham, 42 miles. In all, some 384½ miles of new railway were opened in Britain, but much of it consisted of relatively small extensions, as may be seen from the list included in our Scrap Heap page this week. Although the G.N.R. had been opened through to London in August, 1850, East Coast trains used the roundabout loop line *via* Boston and Lincoln. On July 15, 1852, the "towns line" between Peterborough and Retford, *via* Grantham and Newark, was opened for goods traffic, and on August 1 both local and express passenger trains were diverted to it, thus saving some 20 miles on the run between London and York. As a result, the journey time between these two cities was reduced from about six hours to five, and that between London and Edinburgh from 12 to 11 hours.

Maiden Lane continued as the temporary London terminus until October 14, when Kings Cross was opened for public traffic. The architect was Lewis Cubitt, and he adopted a simplicity of design, which was to "depend for its effect on the largeness of some of its features, its fitness for its purpose, and its characteristic expression of that purpose." The arched roof in two spans each 105 ft. wide was probably the largest of its kind in the world. The plan of it was borrowed from a riding school which had been constructed recently at Moscow for the Tzar.

The impending approach of the G.W.R. to Birmingham caused great activity on the part of the Euston authorities in endeavouring to block the competition, by means which can only be described as unscrupulous. Then complete amalgamation of the two companies was proposed by the L.N.W.R. on August 4, 1852, as the only means of ending the strife. The G.W.R. doubted whether Parliament would sanction the creation of such a vast railway monopoly and suggested agreement and apportionment of receipts, which was curtly rejected by Euston, so the war continued, and broad-gauge trains inaugurated an express passenger service over the 129 miles from Paddington to Snow Hill on October 1, in 2½ hours; goods traffic did not begin until February, 1853.

Railway contractors were in some cases diverting their energies elsewhere. We have seen that Locke and Peto were building French railways in 1852. Peto was also concerned that year in the construction of the Jutland and Schleswig lines. George Hemans (with Richard Boyle, afterwards Engineer-in-Chief of the Imperial Japanese Railways, as his chief assistant) was laying out railways in Spain; and Thomas Brassey began the Grand Trunk Railway of Canada. This was the beginning of Canada's "railway consciousness." Development was proceeding rapidly in the U.S.A., where the event of 1852 was that Chicago was reached from the East by rail.

Henry Booth published the "Case of the Railways Considered"; and Frederick S. Williams produced "Our Iron Roads," the first substantial book for the general reader on the history, construction, and social influences of railways. In the more popular publications, Mrs. Gaskell was contributing "Cranford" to *Household Words*, and in its pages Cranford folk "vehemently petitioned against" a neighbouring railroad which threatened to "vulgarize" their select town. Dickens began "Bleak House" in March, and Dickensians will recall that this describes "Chesney Wold" in Lincolnshire: "Railroads should soon traverse all this country, and with a rattle and a glare the engine and train shall shoot like a meteor over the wide night-landscape, turning the moon paler; but, as yet, such things are non-existent in these parts, though . . . preparations are afoot."

A railway accident resulted in the death, on July 25, 1852, of Thomas Grainger, an engineer who had built several Scottish railways (including the Edinburgh Perth & Dundee line), and also the Leeds Dewsbury & Manchester Railway, and the East & West Yorkshire Junction Railway. The death, on September 14, of the great Duke of Wellington, recalls the earliest of the well-known railway tragedies. The Duke had been the guest of honour at the opening of the Liverpool & Manchester Railway, and, after crossing the line to speak to him, William Huskisson met with the fatal accident that marred the occasion.

Only a few of the celebrities with direct or indirect railway associations who were born during 1852 can be recalled in a brief survey. Sir Ernest Cassel (March 3) had financial associations with the New York, Pennsylvania & Ohio Railway, and the Swedish Central Railway, and was concerned with the reorganisation of the Louisville & Nashville and the Mexican Central lines, and with the financing of the Central London Railway. Sir Charles Gervaise Boxall (August 31) wrote essays on the "Utilisation of Railways for Mobile Artillery"—a reminder that he collaborated with officials of the L.B.S.C.R. in providing an armoured train "capable of firing heavy artillery in all directions from an ordinary railway line." Walter Reginald Baker (May 25) was Secretary of the Canadian Pacific Railway; Francis Cochrane (November 18) was Canadian Minister of Railways & Canals; and Charles James Cropper was a Director of the London & North Western, and of the Cocker mouth, Keswick & Penrith Railway. Sir Stephen Finny (September 8) lectured on railway construction and wrote on railway economics; he was Manager successively of the Eastern Bengal State line, and the North Western Railway of India, and a Member of the Indian Railway Board.

Walter Hudson, for more than a quarter of a century a guard on the North Eastern Railway, was M.P. for Newcastle, served on the Royal Commission on Accidents to Railwaymen, was Chief of Movements Department of the N.U.R., and was eight times President of the Congresses of the Amalgamated Society of Railway Servants. The Earl of Inchcape (born September 11) was Chairman of the Committee appointed by the Secretary of State for India to inquire into the finance and working of Indian railways, and was a Member of the Committee appointed by the Board of Agriculture to inquire "whether a preference was given by English Railways to foreign produce conveyed over English lines." William Henry Warren designed bridges and roofs for Victoria Station extensions at Manchester; and Sir James Thomas Woodhouse (July 16) was a Director of the Hull & Barnsley Railway.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Control of Capital Investment

December 15

SIR,—The answer to the first part of Mr. F. F. Curtis's letter in your December 14 issue is that if any particular station inconveniences passengers, as well as being expensive to work and maintain, the traffic officers should have little difficulty in making out a commercial case for carrying out essential improvements. What cannot be justified is expenditure such as the Railway Executive is incurring at Hampstead Heath and Gospel Oak stations, two sleepy hollows on the moribund North London line. There can be no adequate return on the cost of £80,000.

To say that the condition of our stations is one of the country's stock jokes seems an overstatement. Unfortunately many of our stations are too good for the passenger traffic offering. The crowds which once thronged them have gone to bus stations with scanty amenities and destitute, as a rule, of architectural charm. Leaving out of account the Southern Region with its electric train services, the number of railway passenger journeys has decreased by 35 per cent. since 1937. That is lamentable, but over-spending on station premises will not stop the loss to road and air transport.

Yours faithfully,
YOUR CORRESPONDENT

London, S.W.1

Somerset & Dorset Branches

November 20

SIR,—Recent branch line closures have reduced the secondary lines of the former Somerset & Dorset to the line from Highbridge to Evercreech with a branch to Bridgwater. We now have the anomaly of Highbridge, the smaller town, being served by the main line and the much larger town of Bridgwater being served by a branch. Passenger traffic is not usually heavy on the Bridgwater branch but it may be possible to increase it a little by running through trains from Evercreech to Bridgwater and operating a shuttle service between Edington Junction and Highbridge. This arrangement was in force before the 1914-18 war during the L.S.W.R. ownership of the line when that company competed with the G.W.R. for the London-Bridgwater traffic. There is still some passenger traffic between these two points by this route and the abolition of the change at Edington Junction may help to increase it.

Yours truly,
J. F. BURRELL

80, Longmead Avenue, Bristol, 7

Closing of Branch Lines

December 7

SIR,—I often wonder, when reading press reports of organised opposition to the withdrawal of railway passenger services, to what extent the opposition is inspired by people like myself who have an appreciation of simple rural railways. We realise that sentiment is a poor argument in the councils of economists, however painfully some of us regard the prospect of an England bereft of the picturesque lines that we enjoy.

The Railway Executive would deserve and earn the gratitude of the considerable railway-loving public if it decided to keep one or two of the most attractive rural branches as working unities, irrespective of economics, without radical modernisation to destroy their character. This could perhaps be done in a National Park area, under the auspices of the Curator of the B.T.C.

This may pave the way to a gentleman's agreement by which the railway-loving fraternity, secure in the know-

ledge that its beloved antiquities would not be wholly lost, would withdraw all opposition to the majority of closures and even understand the economic standpoint. In time these lines might recover commercial solvency as valuable amenities in their ultimate rarity.

Yours faithfully,

WILLIAM B. STOCKS
Chairman,
Huddersfield Railway Circle

22, Heatherfield Road, Marsh, Huddersfield

Railway Carriage Design

December 9

SIR,—Many people will agree with the excellent letter from Mr. Graveson published in your December 7 issue. That the Railway Executive should continue to build suburban coaches of antiquated design for possible long-distance use is fantastic. Even for a journey lasting only one hour the use of non-corridor stock can have most unpleasant consequences.

As I pointed out in my letter in your May 11 issue, and as Mr. Graveson has suggested, the construction of open stock with comfortable, preferably reclining and revolving, seats would not only be cheaper but more convenient in every way. The public would much prefer open stock of this kind—even though it is against tradition in this country—and it would be to the advantage of the Railway Executive to construct this type. Why do the officials responsible not use their imagination and move in modern times?

Yours faithfully,
G. RICHARD PARKES

Montcroft, School Lane, Formby

[We cannot agree that the non-corridor compartment coach as such is antiquated, although its use, sometimes unavoidable, is not desirable on long journeys unless the train also includes lavatory accommodation. For short distances many passengers still prefer this type of coach for its privacy.—Ed., R.G.]

St. Pancras Hotel

December 17

SIR,—In your December 14 issue you quote from *The Manchester Guardian* the statement that "When William Chambers, the publisher, was writing of railway hotels in 1886 . . . the St. Pancras Hotel had not yet been opened."

Frederick S. Williams, however, in his eulogy of the Midland Railway, when dealing with the wonders of the St. Pancras terminus, speaks (page 345) of "the Grand Hotel, which, when completed in a few weeks, will be unsurpassed and probably unequalled for combined comfort and magnificence in Europe." Mr. Williams's book was published without bearing a date, which ought to be a criminal offence in the case of a railway book, but its reference to the Settle and Carlisle line being open for goods traffic only dates it as being between August 2, 1875, and May 1, 1876.

It may be interesting to recall one very brilliant period of the life of the St. Pancras Hotel, when in the cycle and tyre boom of 1896 Ernest Terah Hooley had a whole floor of the hotel as his headquarters, and so established a precedent in the art and craft of company promotion which was followed in fiction at the "Hardington Hotel" by Uncle Ponderevo in H. G. Wells's "Tono-Bungay," and in fact at the Grand Hotel, Northumberland Avenue, by "Jimmy" White.

Yours faithfully,

KENNETH BROWN

The Railway Club, 57, Fetter Lane, E.C.4

THE SCRAP HEAP

Some Railway Centenaries of 1952

Below is a list of some railway centenaries which occur during the first half of 1952 :—

January 1, Bow Junction to Poplar opened (1½ miles). E. & W. India Docks & Birmingham Junction Railway.

January 1, Robertsbridge to Battle opened (6 miles). South Eastern Railway.

January 1, Halifax (Dryclough Junction) to Sowerby Bridge (Milner Royd Junction) opened (2½ miles). Lancashire & Yorkshire Railway.

January 1, Alston to Lambley opened (8½ miles). Newcastle & Carlisle Railway.

January 1, Lambley to Kirkhouse Railway opened (1 mile). Newcastle & Carlisle Railway.

January 21, Lawton to Sandbach opened (6½ miles). North Staffordshire Railway.

February 1, Battle to St. Leonards (Bopeep Junction) opened (5½ miles). South Eastern Railway.

February 18, Worcester to Stoke Junction (Midland) opened (9½ miles). Oxford, Worcester & Wolverhampton Railway.

February, Port Penrhyn branch opened (1½ miles). Chester & Holyhead Railway.

March 1, Menai Bridge Junction to Port Dinorwic opened for minerals (3½ miles). Bangor & Carnarvon Railway.

March 11, Hayle to Penzance opened (7½ miles). West Cornwall Railway.

April 1, Shelford Junction to Shepreth opened (5½ miles). Eastern Counties Railway.

April 19, Aberbeeg to Ebbw Vale opened (6½ miles). Monmouthshire Railway & Canal.

April 21, Shrewsbury to Ludlow opened (27½ miles). Shrewsbury & Hereford Railway.

May 1, Droitwich to Stourbridge (Junction) opened (16½ miles). Oxford, Worcester & Wolverhampton Railway.

May 1, Norton Junction to Evesham opened (10½ miles). Oxford, Worcester & Wolverhampton Railway.

May 15, Melmerby to Stockton (North Shore) opened (29 miles). Leeds Northern Railway.

May 31, Rochester to Ashbourne opened (6½ miles). North Staffordshire Railway.

B.R. Helps Out B.E.A.

Because of fog in Paris all British European Airways services from Northolt to Paris on December 18 were cancelled. British Railways came to the rescue by providing a special nine-coach train which left Victoria at 9 p.m. six minutes before the regular "Night Ferry." The special conveyed 292 of the additional passengers and the "Night Ferry," strengthened to six sleeping cars and two ordinary coaches, accommodated 86.

Cornish Railways Director's Passes

Below we reproduce photographs of two railway director's passes which date back to 1863. They were issued in that year by the Cornwall and West Cornwall Railways in favour of George Smith, LL.D., of Trevu, Camborne, who was on the board of both companies for several years, and who was Chairman of the Cornwall Railway from 1859 to 1863. The Cornwall Railway pass measures 1 in. x 1½ in., and the West Cornwall Railway pass 1½ in. x 1½ in. These relics are now in the possession of Dr. Smith's grandson, Mr. H. O. Smith.

The Cornwall Railway was completed from Plymouth to Truro by the opening of the Royal Albert Bridge over the Tamar at Saltash in 1859, the year in

which Dr. Smith became Chairman of the company. The first rough pencil sketches for the bridge were made by Brunel at Dr. Smith's house soon after the Cornwall Railway was authorised in 1846, presumably to give an idea of its appearance. Although the final design did not follow the sketches in detail, the completed structure bore a close resemblance to that depicted in the rough drawings. Dr. Smith's son possessed these sketches for many years, but, unfortunately, they have now been lost.

Per Ardua Ad . . . ?

For four long years we've done our best,
By ardent spirits guided;
We've worked with zeal, if not with zest,
Dizzy, but not divided.

We've tried to show what men can do
To overcome inertia;
We're in the red, but never blue,
In spite of news from Persia.

We've said "goodbye" to many a dream,
It took a bit of doing;
We following patiently the gleam,
Faintly, but still pursuing.

Mystification has worn thin,
We've mental indigestion;
Mortification has set in—
What's next? Ah, that's the question.

For, rumour hath it, false or true,
That "nationalisation"
Is now taboo at 222,
Vivat "unification"!

No matter, we shall worry through,
Whate'er the current phrase is,
If we, in 1952,
Unificate like blazes!

SCORPIO



Obverse and reverse of gold pass (left and right) for the Cornwall Railway, and ivory pass (centre) for the West Cornwall Railway, issued to Dr. George Smith in 1863

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

RHODESIA

South-East Connection

The link which is to be built between Bannockburn on the Shabani line and Guija, in Portuguese East Africa, providing a direct route to Lourenço Marques, should be completed within three years. The route has already been pegged out. The gradient will be particularly suitable for freight, and the principal traffic at first will probably be asbestos exports and petrol imports. The line will develop the midlands area of the Colony, with Gwelo as its centre, good cattle country will be traversed and an undeveloped region will be opened up.

New Pay Rates

New pay schedules, which will benefit approximately 7,000 European employees, will be introduced on January 1. Briefly, the increases are 10 per cent. on basic rates, plus variable cost of living allowances, and a marriage allowance in place of existing "outside" house allowance. African rates of pay have been increased recently.

The railways are suffering from a severe shortage of both European and African staff, and the new rates, it is hoped, will attract more recruits.

NIGERIA

Drivers Working to Rule

Working to rule by engine drivers which began on December 10 may affect the transport of a 300,000-ton crop of groundnuts from the north. Their action was dictated by the African Locomotive Drivers Union

after the breakdown of conciliation talks between the union and the railway. In 1948 the union made claims similar to those which have caused the present dispute.

The Government made important concessions, giving an improvement in the wages scales of locomotive drivers in two grades. The union reopened the dispute last June, but meetings between the union leaders and railway management produced no result, as the authorities took the attitude that there was insufficient evidence to justify a claim of 50 per cent. increase over present rates for Grade I drivers.

The railway management served notices that all drivers taking part in the go-slow were liable to dismissal. It also said that it was willing to resume negotiations, but not under unconstitutional threat and pressure.

SAUDI ARABIA

Railway Opened to Capital

The date of opening of the railway throughout to Riyadh, the capital, not due to take place until January 1 next, was brought forward to October 20, by the wish of King Ibn Saud. The King and Crown Prince were present at the inaugural ceremony.

Three more Budd stainless steel self-propelled railcars are expected shortly.

CANADA

Toronto Underground Progress

Work is well advanced on most of the 12 stations on the line being constructed under Yonge Street, the main north-

south thoroughfare of Toronto. At some stations the main structural work is complete and only back-filling and surfacing over remain to be carried out; at others excavation and underpinning are still in hand. The Toronto Transportation Commission recently let another contract, valued at \$4,000,000, for the completion of 11 of the 12 stations. It includes painting and all other interior finishing, sound insulation, woodwork, plumbing and drainage, and electrical, pumping and ventilating services. Eglinton, the northern terminus, is to be built as part of another contract.

Grain Rates Increase Sought

The railways have disclosed they are seeking increases in the freight rates on grain moving within the West for domestic consumption, which has been exempt from increases since early 1948. Their decision was made known to the Board of Transport Commissioners when the Board opened hearings on the application by the railways for a further rate increase of 10 per cent.

UNITED STATES

Remodelling Morrisville Yard, P.R.R.

At the end of last century, when the Pennsylvania Railroad built the easily-graded 45-mile Trenton cut-off to avoid the Philadelphia area, a classification yard was constructed at Morrisville, where the cut-off rejoined the main line to New York. Because of the depression, it was closed in the 1930s, and though used again during the war, it has been held in reserve subsequently. The construction of the United States Steel Company's new Fairless Steel Works has now necessitated the expansion and modernisation for hump shunting of the yard at a cost of over \$9,000,000.

The works involved include the dismantling of over 26 miles of existing track and 177 turnouts, the shifting of some 13 miles of track, and the laying of 28 miles and 190 turnouts. About 200,000 cu. yd. of earthwork and 125,000 cu. yd. of ballast are required. When completed—if materials are available, by the end of 1953—the remodelled yard will have 45 classification roads, and the work at present carried out at Coalport Yard and East Trenton Locomotive Depot will be transferred to Morrisville.

ARGENTINA

Railway Operates Airport Restaurant

The Ministro Pistarini Airport at Ezeiza on the outskirts of Buenos Aires is one of the largest and most modern in the world and impresses passengers arriving from overseas by Argentine or foreign airlines with the luxurious ap-

Australian Main Line Diesel Haulage



Diesel-electric locomotive "Lady Norrie" at Adelaide Station, South Australian Railways

pointments of its auxiliary buildings. It may therefore be considered a tribute to the excellence of the services of the refreshment department of the General Roca Railway that it should be entrusted with the operation of the restaurant, grill, American bar and boite (night club). These occupy the third floor of the main building, and, except the boite, overlook the runways. The decorative scheme is enlivened by large mural paintings of Argentine scenes, and large windows are a special feature.

The furnishings are all of Argentine wood and brightly coloured leather upholstery. The restaurant is designed to take 70 tables for four and six persons, and the American bar and grill each hold 35 tables.

Enthronement of Statue at Station

A statue of the Virgin of Luján, patron saint of the railways, has been enthroned in the hall of the *Primero de Marzo* (formerly *Once*) terminus of the *Domingo Faustino Sarmiento* Railway. Similar statues have already been enthroned at other Buenos Aires termini.

IRELAND

Greenore Railway Closing Order

The Northern Ireland Transport Tribunal, meeting in Belfast on December 13, granted a closing order for the Dundalk Newry & Greenore Railway. The line was stated to have accumulated losses totalling £1,000,000. In his summing up the Chairman of the Tribunal stated that the Tribunal considered that there was no answer to that, and accordingly made the order asked for under Section 57 of the Act.

Mr. C. A. Nicholson, for the company, said that the railway extended only five miles into Northern Ireland and it had never paid. The British Transport Commission had decided to

withdraw financial support from December 31, 1951. The line had been offered for sale to likely buyers, namely the U.T.A., G.N.R.(I.) and C.I.E., but none of these was interested.

Mr. John Chambers, the General Manager of the D.N.G.R., said that the loss on working was met first by the L.N.W.R., then by the L.M.S.R. and finally by the British Transport Commission. It was felt that this loss could no longer be borne.

A public notice issued by the company states that all train services will be discontinued after December 31.

C.I.E. Information Bureau

The switching on of three electric clocks marked the inauguration of the new C.I.E. information kiosk at Nelson Pillar, Dublin. The kiosk is of modern design, built in light pre-fabricated concrete, with large windows displaying illuminated posters. It was designed by the C.I.E. Public Relations Department and built in the company's workshops at Broadstone.

Sligo Leitrim & N.C. Railway

At a recent meeting of the West & North West of Ireland Livestock Exporters & Traders' Association Limited this week, the threatened closing of the Sligo Leitrim & Northern Counties Railway between Sligo and Enniskillen was discussed. It was decided to request the Minister of Industry & Commerce in Dublin to make arrangements to have the railway taken over like the G.N.R.(I.), or subsidise it.

FRANCE

Paris-Lyons Electrification

The electrification of the Dijon-Chalon-sur-Saône section of the Paris-Lyons line, is to be completed by mid-January. The first train, carrying the

official inauguration party, will be run between January 20 and 30. The final section, Chalon-Lyons, will be completed before the end of next summer. Meanwhile some freight and local passenger trains will be electrically hauled as far as Chalon. The Dijon-Chalon section is some 42 miles in length and it is a further 80 miles from Chalon to Lyons.

SPAIN

Alar-Santander Electrification

The President, Manager, and Assistant Managers of the R.E.N.F.E. have visited Santander in connection with the proposal to electrify the Alar-Santander section of the *Venta de Baños-Santander* line. This section is 86 miles long.

WESTERN GERMANY

Grossenbrode-Gedser Ferry

The ferryboats on the new international route between Grossenbrode, in Schleswig-Holstein and Gedser, in Denmark, to which we referred in our November 30 issue, now convey railway wagons.

The German Federal Railways have undertaken new works to enable this route to deal with heavier traffic, both passenger and goods. Spur lines are under construction to eliminate reversal between Hamburg and Grossenbrode, and at the latter point commodious Customs and waiting halls and other passenger-handling facilities are being provided.

The complete international service, with passenger vehicles conveyed by the ferryboats, is not expected to be inaugurated before 1953, though a restricted through service may be inaugurated before then.

Publications Received

Problems of Engineering Training.—A review of the problems of engineering training is given in a very useful monograph entitled "Selection, Training & Education for Technical, Supervisory & Managerial Staffs in the Engineering Industry," published by the British Engineers' Association at 2s. There is incorporated a special section dealing with problems which particularly affect the smaller firms. Appendices include a training schedule for technicians, typical forms for reports and records, an organisation chart of a smaller firm, a list of bodies connected with education and training for industry, and a short bibliography of important reports impinging on these problems.

Electricity in Transport.—By H. H. Andrews, M.I.Loco.E. London: The English Electric Co. Ltd., Queens House, Kingsway, W.C.2. 8½ in. x 8½ in. 183 pp. Illustrated. Price 12s. 6d. —This book tells of the achievements

of the English Electric group of companies in the application of electricity to transport from 1883-1950, and, though it does not profess to be a complete history of rail and road electrification and diesel-electric traction during that period, the experience of the English Electric Co. Ltd. and its predecessors over more than 60 years of intensive development and manufacturing progress has been so varied that traction history is in fact presented in an interesting way in these pages. The book should prove of considerable value not only to practising engineers, but to students as well, and to all who are interested in the historical aspect as well as in modern techniques.

Pneumatic Tyres on Underground Railways.—In the December issue of *Rubber Developments*, which is published by the British Rubber Development Board, Market Building, Mark Lane, E.C.3, there is an illustrated article by M. H. Ruhlman, General Engineer of the Technical Services of

the Regie Autonome des Transports Parisiens, describing the experiments and background history in the use of pneumatic tyres for underground trains. Free copies of this issue can be obtained from the Board.

German Federal Railways Publicity.—Recent advertising literature includes leaflets describing season ticket and group travel facilities, the travel saving stamps scheme, and the new route to Denmark via Grossenbrode/Gedser. Advantage is taken of the German taste for writing postcards when on excursions by the distribution to excursion passengers of railway picture postcards. At principal stations, child passengers obtain free copies of the *Eisenbahn Kinderzeitung* (Railway Children's Newspaper).

Calendars and Diaries for 1952.—We acknowledge receipt of calendars from the Hunslet Engine Co. Ltd.; D. P. Battery Co. Ltd.; A. C. V. Sales Limited; and Swedish Lloyd; and a diary from the British Oxygen Co. Ltd.

Some Features of the Rectifier Locomotive

An examination of some of the problems to be overcome in the development of successful designs

By J. E. Bowler, B.Sc. Econ., A.M.I.E.E., A.M.I.Mech.E.

THE contemporary rectifier locomotive is essentially a single-phase machine, not because a multi-phase type is not technically practicable, and indeed in some respects preferable, but because single-phase traction is the only a.c. system which presents outstanding advantages over direct current and for which such locomotives are needed. At first sight the arrangement seems ideally simple: alternating current is fed to a rectifier through a transformer which by tapping switches can act as a speed control, thus eliminating resistances. The

50 per cent. of the d.c. voltage, is fed to the traction motors. Higher harmonics may be neglected as they are initially of low amplitude and are further attenuated by the measures taken to deal with the 100 cycles ripple.

It should be emphasised at this point that the avowed object of the rectifier equipment is to avoid the use of a.c. motors and to obtain the great advantages for traction of the d.c. series motor. It is therefore the effect of the rectifier output on the performance of standard d.c. traction motors which must be examined, and any difficulties must be

ably in excess of those obtained on d.c. These phenomena are what would be expected and could have been predicted from theoretical considerations. The most serious effects spring from the flux ripple set up in the main field of the motor by the 100 cycles ripple from the rectifiers. This flux ripple creates eddy current losses in the solid frame of the motor so augmenting the heating, and also sets up the familiar transformer e.m.f. experienced in a.c. commutator motors, so adversely affecting commutation.

Apart from the effects of flux ripple which are the most serious problem, the supply ripple also causes increased heating due to the higher R.M.S. value of the motor load current which is not paralleled by increased motor rating. The solid interpoles used on many d.c. motors are unable to allow the rapid flux changes necessary to compensate fully for the 100 cycles ripple in the armature circuit; hence imperfect commutation from this cause also.

Experience on the Höllentalbahn and in America has shown, however, that d.c. motors will run satisfactorily on this undulating current supply provided either that the 100 cycles component is reduced to an amplitude of 10 per cent. of the d.c. before reaching the motors, or that the flux ripple in the main fields is reduced to a similar percentage and the interpoles re-designed to follow the 100 cycle ripple in the armature.

These two distinct approaches to the problem have in practice been combined. In selecting the particular method to adopt it must be remembered that every additional complication reduces the advantages of the rectifier locomotive compared with the direct motored types, and it is therefore out of the question to consider such methods as converter sets for single to polyphase conversion followed by polyphase rectifiers.

Smoothing Equipment

For smoothing between rectifiers and motors the commonly-used equipment consists of some kind of reactor offering a high impedance to 100 cycles currents, or a resonant by-pass filter tuned to 100 cycles. These arrangements are combined in the experimental rectifier motor coach Z 9055 equipped with Westinghouse ignitron equipment and now under test on the experimental 50 cycles line of the French National Railways.

With this equipment the ripple is reduced to approximately 10 per cent. at the motors (which incidentally are the original d.c. motors installed when the coach was first built as a straightforward 600 volt d.c. equipment in 1914),

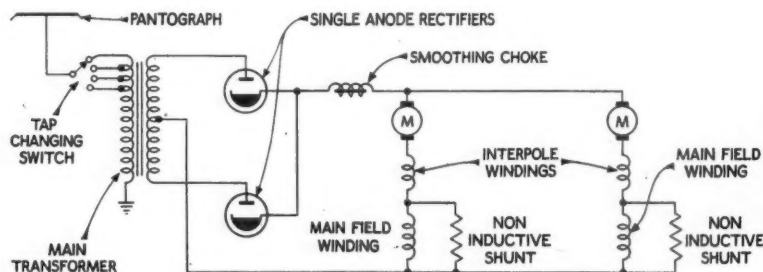


Fig. 1—Basic circuit of rectifier locomotive

direct current output from the rectifier is fed to d.c. traction motors.

In practice these fundamentals require a considerable structure of refinements, primarily due to the characteristics of the "d.c." output from a single-phase rectifier. A simplified basic circuit for a locomotive is shown in Fig. 1, from which the rectifier and transformer connections will be clear; the resulting output wave form at the terminals of the rectifiers is shown in Fig. 2. As is explained later, this output requires considerable smoothing before being fed to the traction motors.

"Undulating" Output

It will be seen that by using two single-anode rectifiers and a transformer with a centre-tapped secondary, the negative half-cycles of the 50 cycle/sec. a.c. are reversed, giving an "undulating" but always uni-directional output to the traction motors. Harmonic analysis of this output reveals that it consists of a direct current component with a harmonic of large amplitude at twice the supply frequency, and higher harmonics such as 200, 300 and 400 cycles of progressively decreasing amplitudes. These are additional to harmonics which may be present in the single-phase a.c. supply to the locomotive. In effect therefore a mixture of direct current at an appropriate voltage, and 100 cycle/sec. a.c. of amplitude about

surmounted within the framework of this type of motor. Clearly the whole object of the design will be lost if the problem is solved by the use of an a.c. motor, for instance.

The effects of the mixed supply

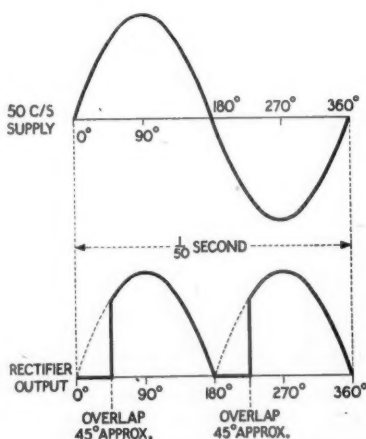


Fig. 2—Output wave form at terminals of rectifiers

on d.c. machines is startling. Commutation is deplorable, and the efficiency is lowered by the increased heating losses, hence the temperature rises for a given rating are consider-

and they function quite satisfactorily with this magnitude of ripple.

As this pre-motor smoothing equipment must carry full motor current, it is heavy, and to keep it to a minimum it has been found possible to apply palliative measures at the motors enabling them to accept a greater ripple amplitude. These measures, directed principally to reducing the main flux ripple, consist of resistive shunts in parallel with the main field winding, and laminated interpoles with an increased back gap. The latter allows better compensation by the interpoles of the ripple current in the armature while the former by offering a path of negligible reactance to the ripple, diverts it from the relatively high reactance of the main field winding.

It will be appreciated that the selection of the correct value for the shunt is of some importance as if it is of too low a resistance an unnecessarily large proportion of the d.c. component will be by-passed, so resulting in unwanted field-weakening and some heating losses in the shunt. It may be objected that this method also robs the motor of its natural protection against surges, but it is amply protected by the transformer from such surges which presumably will originate on the overhead line or the power supply system.

It was stated at the Ancon Conference that with the use of suitable values of smoothing choke and field shunting resistance, together with laminated interpoles, the operation of a d.c. traction motor on undulating current becomes practicable. Further refinements are clearly desirable, such as lamination of main poles to reduce iron losses, multi-strand conductors to reduce skin effect, increase in the number of poles and reduced flux per pole to reduce the transformer e.m.f. and so on. All these are by no means essential, and an economic balance must be struck before the undulating current motor ceases to be d.c., and becomes a 50-cycle a.c. motor.

The tractive effort/speed curve shows that the rectifier locomotive develops a higher torque at low speeds than the 50-cycle motor and *vice versa*. It is thus suitable for heavy loads at low speeds and for services having frequent stops. It is not, however, so good in this respect as the d.c. locomotive. It

has the further advantage over the 50-cycle motored locomotive that the undulating current motors can be designed for about 800 volts, i.e., three times the voltage of "straight" a.c. motors, and with fewer poles, so that the commutators are less, the windings are fewer, and the motors themselves are smaller and lighter. For these reasons the rectifier locomotive offers considerable competition to the 50-cycle motored locomotive for 50-cycle electrification.

Of the remainder of the equipment of the locomotive it might almost be said that once the motor problem is solved, the other difficulties are negligible. At the outset it need hardly be said that air-cooled pumpless rectifiers are infinitely preferable to the water-cooled types used in pre-1939 experiments. Their use avoids the storage of cooling water and the associated circulating pumps, also the roughing and final vacuum pumps.

Rectifier Cooling

The rectifier cooling can be an extension of the traction motor cooling system, and no extra auxiliaries are necessary. Similarly, a number of single-anode units is preferable to several parallel anodes in one tank, both from the viewpoint of convenience of layout and balancing, and from that of replacement of defective units. With several individual units the locomotive can continue to run with one unit out of action due to a defect.

Technically the main questions are the selection of a convenient output voltage, and the correct rectifier capacity. It has already been stated that 800 volts is a suitable voltage for "undulating current" motors. It must be remembered, however, that the constant voltage drop across the rectifier arc is irrespective of rectified voltage, consequently the higher the latter the higher the efficiency. As satisfactory performance is obtainable with such voltages as 3,000 V. it is obviously preferable to run at a higher output voltage than 800 V., if possible. This can be done by connecting motors in permanent series pairs; the rectifier output then is 1,600 volts. As the overload capacity of a rectifier is of the order of 50 per cent. for two hours or 200 per cent. for five minutes, it should be possible, depending on the service, to install

rectifiers such that 150 per cent. total continuous rectifier rating equals the total motor capacity at the one-hour rating.

Although grid control of rectifier output is used successfully in fixed installations with polyphase rectifiers, it is not suitable for speed control of rectifier locomotives because of the complicated equipment needed and because such control would exacerbate the already unsatisfactory asymmetric output wave form shown in Fig. 1. Transformer control is much to be preferred.

The transformer will be centre-tapped on the secondary side, but will be otherwise of a straightforward type. Speed control through tapplings on the transformer is best carried out on the primary side for a number of reasons. Although the voltage to be dealt with is much higher, the currents are correspondingly lower; by the use of suitable contacts and bridging resistances it need never be necessary to break the full current at the tapping point. Further, for fine and equal gradations of control, tapplings on the primary side, with its larger number of turns, can be made more accurately. With a centre-tapped secondary, voltage control from the secondary side would require identical tap changing equipment at the outer ends of both halves of the winding, with step-by-step synchronism between them, or elaborate auto-transformer equipment.

Finally, experience so far with rectifier locomotives has indicated certain salient facts. The power factor varies with speed and is from 0.7 to 0.85, which is much better than is obtainable with direct 50-cycle motor locomotives. The efficiency is also quite good—of the order of 85 per cent. It can be said that within a narrow and accurately determined service range for which it is specially designed, the direct 50-cycle motor locomotive is superior to the rectifier locomotive, but for applications of a more general nature, involving widely differing services, the rectifier locomotive gives a better average performance. Past experience having shown the futility of tailor-made locomotives for special services, it seems that the rectifier locomotive should have a wide range of applications on any 50-cycle electrification.

ACCIDENT PREVENTION EXHIBITION AT DERBY LOCOMOTIVE WORKS.—An exhibition for the promotion of accident prevention and safety for workers recently held at Derby Locomotive Works was the first of its kind ever held in the London Midland Region. Exhibits were divided into sections, dealing with the works medical and accident service, workshop exhibits, fire prevention and electrical hazards, respiratory safeguards, and protection of eyes. There were also sections largely comprising exhibits from industrial firms specialising in machine guarding and in safety footwear. The exhibition was opened by Mr. J. F. Harrison, Mechanical & Electrical Engineer, L.M.R. Executives

and safety officers of other industries visited the exhibition and on an open day for employees and their families several hundred people attended.

SAFETY COLOUR CODE PROPOSALS DROPPED.—Industry has been paying increasing attention to colour coding of danger points in factories, and a committee of the British Standards Institution has been considering the possibility of preparing a safety colour code to secure unification of present practices. The Royal Society for the Prevention of Accidents made an extensive inquiry on behalf of the committee as a result of which it has now been decided to abandon the attempt to prepare a code. Among the

reasons for not proceeding with the proposal is the fact that examination of the problem showed that a distinction must be made between a safety colour code and an identification colour code. Many colours have traditional connotations which, though not always consistent, are so well known that they could not be reconciled. Another difficulty was that the only truly satisfactory method of ensuring safety is to eliminate the hazard, and it was felt that a code might encourage identification of hazards by colour instead of their removal. Finally, the increase in the scientific use of colours for decoration to secure better light and to improve working conditions detracted from the effectiveness of a safety colour code.

Modernised Marshalling Yard at Toton—5*

Illumination, loudspeakers, motive power, and humping records

THE lighting at the old yard, both external and internal, was provided by gas, and much of the equipment, including the mains, was comparatively old. To conform to the new yard layout a completely altered installation would have been necessary, and therefore, in accordance with the policy of using electricity as the source of supply at marshalling sidings, it was decided to incorporate electric lighting for the remodelled yard and new structures. This policy had been decided on as maintenance at electrically-lighted yards is less difficult and greater flexibility is possible in catering for the exceptional requirements of mechanised operation.

A mains supply was essential for power purposes to operate the pumps serving compressors for the railbrake machinery and point equipment, and for various signalling & telecommunication and other requirements, and transformer sub-stations with a ring main were planned as necessary.

The internal lighting of structures is of the conventional pattern without any striking features, as in many of the buildings, such as the signalboxes, hump room and the control tower operating room, intensive lighting is not required. The yard lighting is on a considerable scale, taking into consideration the large area to be covered both longitudinally and laterally, and upwards of 270 lamp standards have been provided. Difficulty was experienced in obtaining timber poles, and as a result second-hand rails were used. Each standard comprised a pair of serviceable second-hand rails joined by steel strips welded on in the form of steps (thus avoiding the necessity for separate ladders) and set in a concrete pipe bed.

In most of the new Up yard structures, gas has been retained for heating. Previously all heating was by coal stoves, or open fires, thereby creating smoke, which is a particularly undesirable feature in mechanised yards.

Loudspeakers

An essential feature in speeding-up yard operations is the provision of facilities for rapid communication between key points. Experience at Toton Down and other yards, had shown the value of loudspeaker equipment as an efficient means of issuing instructions both during, and in between, actual humping operations, discussing and arranging internal movements, notifying contemplated moves and conveying the many intimations and requests inherent to the work at a large yard. The use of loudspeakers obviates the necessity of relying on telephone circuits being unoccupied, or on hand signals, or shouting, for shorter distances.

* Previous instalments of this article appeared in our issues of November 16 and 23 and December 7 and 21

Previously, at the Up yard there was no loudspeaker communication and it was decided that the remodelled yard should be provided with this facility between all the principal operating and supervisory points. Care was taken to see that the objective was not defeated by a superabundance of circuits which might result in excessive speech and so cause confusion. The installation provided is the largest of its type at any yard on the London Midland Region, and is illustrated in the accompanying diagram, Fig. 14, which should be read in conjunction with the general layout plan of the new yard. There are thirteen separate circuits, all two-way, and they are of the normally closed type, to avoid picking up extraneous noises.

The triangles shown in the diagram represent outdoor installations with

apart and the circuits suitably paired, so reducing the risk of confusion from simultaneous reception. It was felt unnecessary to incur the considerable extra expense which would have been involved by providing illuminated or other type of circuit occupied indicators. Outside projectors, indoor cabinets and different types of microphone mounting can be identified readily in some of the photographs accompanying this article.

No new telephone circuits had to be provided, and requirements were covered by rearranging existing circuits, extending where necessary, installing instruments in new structures, and recovering those from displaced buildings. The former telephone circuits which were mostly of the omnibus type were fairly heavily occupied, To provide

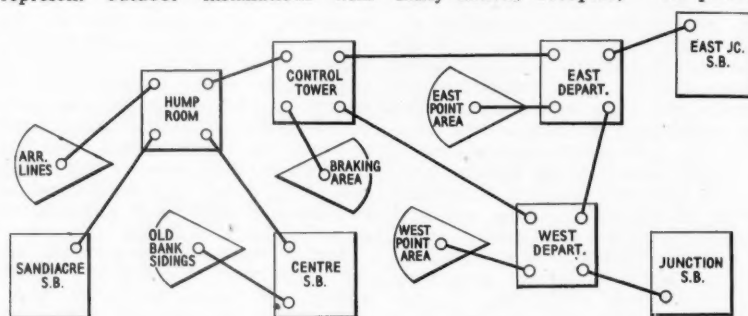


Fig. 14—Diagram illustrating loudspeaker circuits at Up yard

horn-type projectors, duplicated as necessary to cover particular areas. Weather-proof microphones are repeated at strategic points and speech is relayed on the depression of a rubber-covered push button. The squares illustrate indoor locations where loudspeakers of conventional type are provided, except in the east and west departure buildings. Here projectors of the horn type are fixed outside the lobby, so that messages can be heard by the supervisor, or shunters, whether out of doors, or inside, with a common microphone served by separate push buttons where there is more than one circuit.

The indoor microphones at the other buildings are either on extensible arms, hand sets, or pedestals, according to circumstances. In the hump room and control tower they are duplicated so that a supervisor can speak on an unoccupied circuit without disturbing an operator engaged on humping, during which time he must have priority to transmit urgent messages. In these two buildings key switches are provided—one for each circuit, in proximity to the microphones.

As there are four circuits connected to the hump room and four to the control tower, there are two loudspeaker reception cabinets in each, positioned

communication compatible with the requirements of a modernised large yard, it would have been essential to instal additional telephone circuits, but for the easement given by the loudspeaker equipment described already.

To give the most efficient means of telephonic communication and reduce ringing on the metallic omnibus circuits, the opportunity was taken to include selective ringing on certain circuits by means of special keys. In the hump room and control tower, the circuits are connected into one concentrator, or keyboard, and the same procedure has been followed at Stapleford & Sandiacre signalbox, where there are additional telephone circuits. This is a busy signalbox, as it is also a train reporting point for district control purposes, and is manned accordingly. The concentrator cabinets are provided with two hand combination sets, one at each end. As a result it is possible for two persons in the same room to initiate, or receive, calls on two separate circuits at the same time, or both to speak on the same circuit from the one room.

Motive Power

Independent of the Up yard reconstruction scheme, but as part of its policy of introducing diesel-electric

locomotives for continuous yard shunting work, the L.M.S.R. had used diesel-electric 350 h.p. locomotives at the Toton Down yard, both for hump and subsidiary shunting, from the commencement of mechanised operation in 1939. The same type of traction had already been used at the Up yard for some years before the recent remodelling, and as further locomotives have become available, all the former Up yard steam locomotives have been replaced by diesel-electrics. These locomotives have proved to be most suitable for 24-hr. yard work, particularly under mechanised conditions, where rhythmic humping movement, absence of smoke and continuity of availability are of great importance.

The diesel-electric locomotives carry sufficient fuel-oil for at least a full week's continuous work. The following shows the number of diesel-electric locomotives normally used on shunting at the Up yard, and diagrammed for continuous duty from 6 a.m., Monday, to 6 a.m., the following Sunday, being extended during Sunday for varying periods, as and when necessary according to traffic conditions:—

No. of engines	Working area
2	Hump end
1	Outgoing end, west side
1	Outgoing end, east side
1	Chilwell group

When operating within the confines of the Up yard the engines are manned by a driver only. Should they require to pass over running lines, which is not normally necessary, except when proceeding from the motive power depot on the Down side on Monday mornings, and returning there on Sundays, a fireman, or other competent second man, accompanies the driver. Steam locomotives are used for transfer work between the Up and Down yards, and for local trips, also for shunting the wagon repair sidings for one 8-hr. turn of duty daily.

Arrangements are made as far as possible for the diesel drivers to take their recognised meal break at the same time as the shunting staff, and a brief period daily is allowed for looking over their engines. These engines are capable of propelling 75 loaded 13-ton coal wagons, or equivalent gross tonnage, from a state of rest on the arrival lines to and over the hump. On occasions when it is necessary to draw back wagons out of the sorting sidings up the steeper gradient over the hump for re-shunting, a single engine may haul up to 35 wagons and two diesel locomotives coupled are authorised to draw back 70.

Experience at the Down mechanised yard, where 1.75 m.p.h. was decided on, indicated that this would be suitable as the normal humping speed for the Up yard. This gives a time interval between cuts of single standard wagons passing over the hump of about eight sec. In practice a speed of 2 m.p.h., giving a time interval of 7 sec., is attained for short periods, but cannot usually be sustained indefinitely, due to intermittent abnormalities, such

as binding brake blocks, greater resistance round curves of vehicles with unusually long wheelbase, vehicles requiring special attention and other exceptional features.

Though experienced shunting engine drivers find little difficulty in conforming to ideal humping requirements, their efforts are greatly assisted by the precision speedometer with clearly defined markings up to 2 m.p.h. which is provided on a number of diesel-electric locomotives.

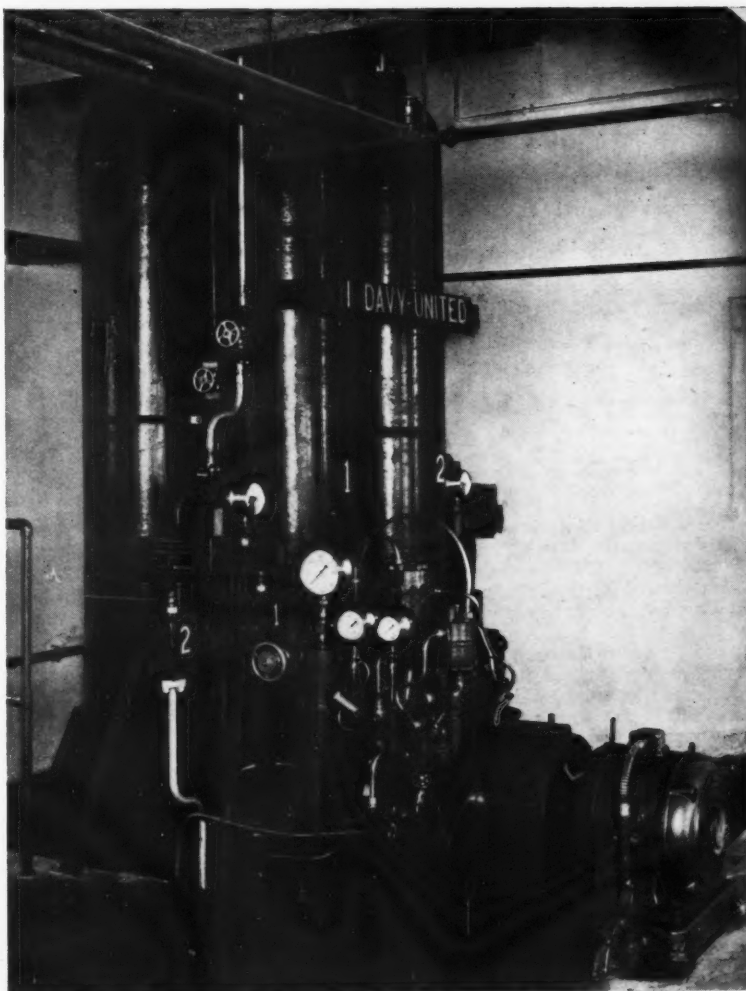
The speed applied when the "Hump slow" signal aspect is displayed is 1 to 1.25 m.p.h.—a requirement only resorted to as a temporary intermittent measure in the event of abnormal conditions arising during an otherwise normal humping operation. The laying down of a specified "Hump slow" speed is a guide to the driver, but the displaying of the "Hump slow" aspect in practice is a warning to the driver that he is propelling at too high speed. Restoration to "Hump normal" is in the hands of the operator in the hump room, as he is the person in primary

control over movements when humping takes place. During this time his operation of the humping signals must be governed by the correct separation of cuts as wagons descend from the hump apex, and any modifications which may become necessary in and beyond the railbrake area, notified to him from the control tower.

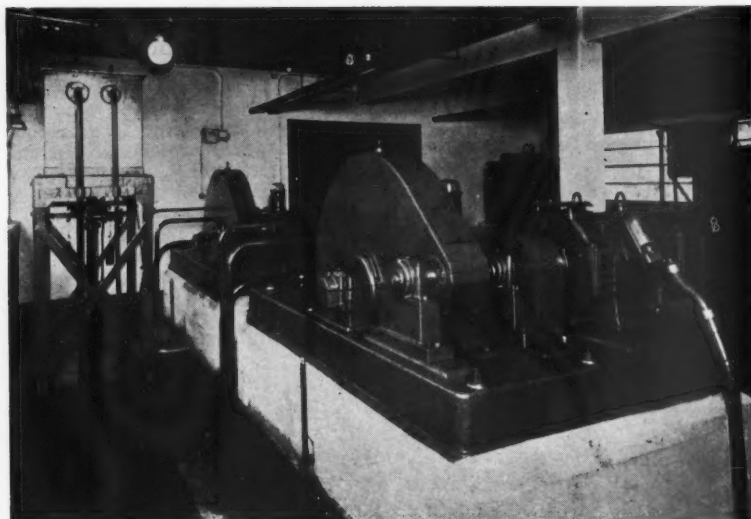
To reduce the time lag which would otherwise occur in traversing the distance from the leading wagon of a train on the arrival lines to the hump, the speed between these points need not be unduly limited, provided normal speed as indicated in the humping signal aspect displayed is not exceeded by the time the leading wagon reaches the hump apex.

Water Supply

In addition to mains for the supply of drinking water for staff amenities, it was necessary to cater for alterations to the position of water facilities for train locomotives. New parachute tanks were provided at points suitable for steam engines, with hydrants to enable diesel-



Air-oil hydraulic accumulators in the railbrake machinery room of the control tower



Hydraulic pumps in railbrake machinery room in control tower

electric shunting locomotives to have their radiator water replenished. These hydrants, with one or two others at convenient points, are capable of permitting hose to be connected should fire-fighting be necessary. At the parachute tanks, ash bunkers have been provided to avoid untidiness and facilitate loading up into wagon.

Records

The special form used for recording humping operations is shown in Fig. 15; a separate sheet is used for each turn of duty, and the form is entered up currently in the hump room. As will be seen, the principal items recorded are:—

- Train
- Time of arrival
- Engine liberated
- Arrival line humped off
- Time humping signal given
- Time first wagon over hump
- Time last wagon over hump
- Where hump engine sent
- Number of wagons on train
- Number of cuts on train

There is also an hourly summary and space for remarks, in which are shown all items of special importance, and an explanation of large amounts of standing, or non-humping time. The number of wagons on a train and the number of cuts are easily counted from the moving paper cut list in the control tower, and the operator in that room gives this information to the hump room over the loudspeaker.

The third column in the illustration shows the time the train passed Stanton Gate, which is the last signalbox before reaching Stapleford & Sandiacre signalbox, which controls the entrance to the Up yard. This information normally is given by the train guard to the hump room staff, with the time and origin of the train and it enables the Yardmaster when scrutinising the returns, to see at a glance whether there has been any undue delay in acceptance off the running lines. The form has been printed for use at either

the Up, or the Down yard, and from them a running summary of wagons and cuts dealt with is kept in the Yardmaster's Office. The necessary records at the outgoing ends of the yard are on standard pattern British Railway forms.

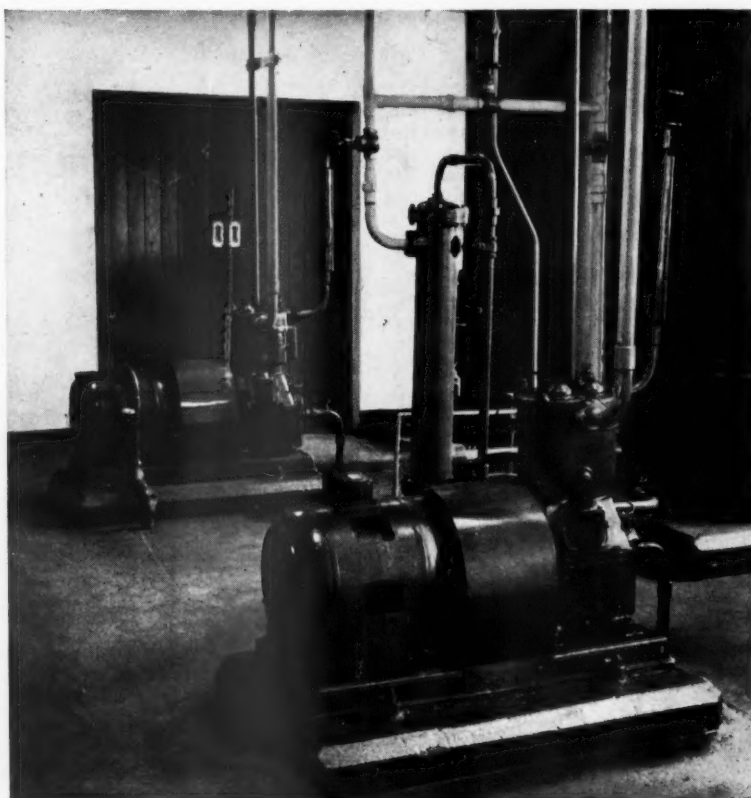
During the first 26 weeks of 1951 the total number of wagons shunted over the new Up hump was 509,812 in cuts which averaged 2.15 vehicles. The

highest number of wagons dealt with to date in 24 hr. is 3,948 and in one eight-hr. turn of duty 1,549.

No attempt has been made to create records in performance, and a precise assessment of the potential capacity of the yard as a whole is difficult because of fluctuations in coal output and distribution. Another contributory factor is that in the unavoidable absence of fans of departure sidings, the over-all operational capacity is governed to a considerable extent by the ability, or otherwise, to despatch outgoing trains currently from the sorting sidings; this, in turn is dependent on the availability and occupation of paths over the main line.

Between 2.58 p.m. and 4 p.m. on May 17, in addition to liberating two incoming train engines, six trains, making a total of 363 wagons, were shunted over the hump, but this rate cannot be maintained indefinitely, particularly as it is necessary from time to time to close together vehicles in the sorting sidings which have failed to come in sufficiently close contact to enable them to be coupled. It is also necessary to make room where wagons have not run sufficiently far, bearing in mind that, especially in the East yard, the sidings are of considerable length.

Whilst figures of the order quoted could not be achieved with only one humping engine, the track layout, type of locomotive, hump signalling and the modern equipment provided, all contri-



Portion of air compressor plant in control tower for electro-pneumatic points

E. R. O. 52915

B.R. (L.M. Region).

Weather—

RECORD OF HUMP SHUNTING, TOTON ~~DOWN~~^{UP} YARD.

Date 26-6-1951.

Turn of duty { ~~8 a.m. - 2 p.m.~~ 2 p.m. - 10 p.m. } Tues - day

COPY.

TRAIN										HUMP SHUNTING										OTHER PERIODS			
Train	Engine No.	Time arrived at S. Gate	Time engine liberated	Actual line	Time signal first wagon over humping	Time last wagon over hump	No. of Cuts	No. of Wagons	Hump Engine No. or Target No.	Time left hump	To	From	Time	Remarks									
1:30 Maptenley	43979	1:25	1:40	1:42	2:13	2:15	2:21	15	47	12046	Yard	2/21	2/36	Pushing 36, 32									
ex Down side	7651	—	1:45	1:45	2:23	2:26	2:35	22	50	12045	Sandiacre	2/30	3/15	2 wrong wgn. 37 Rd. 36, 34									
6.0 Nonmanten	48618	1:56	1:59	1:55	2:41	2:43	2:50	39	70	12045	Yard	3/3	3/17	Pushing 20, 25									
ex Maptenley	44136	1:45	2:4	2:7	2:51	2:54	3:3	43	57	12046	Yard	3/54	4/13	" 25									
12:15 Sleight	48184	1:55	3:8	3:10	3:18	3:20	3:25	21	35	12045	Sandiacre	4/4	4/8	Clear 31 road									
1:15 Gooles PR	43050	3:5	3:10	3:12	3:37	3:30	3:34	18	31	12046	Sandiacre	4/38	4/49	Pushing 36									
1:30 Banger	48636	3:15	3:25	3:26	3:36	3:38	3:43	28	60	12045	Sandiacre	5/40	6/0	Pushing 20, 26, 19									
12:20 Hickory	48000	3:10	3:28	3:35	3:44	3:46	3:54	33	48	12046	Yard	6/30	6/52	Food									
1:25 Spl. Portland	44204	3:40	3:50	3:56	3:58	4:0	4:14	14	29	12045	Yard	7/43	8/10	Pushing 36, 35									
6:15 Wash	48661	3:50	4:0	4:5	4:14	4:16	4:21	11	51	12045	Sandiacre	8/38	8/55	" 36, 21									
10:55 Staveley	48185	3:55	4:7	4:9	4:24	4:26	4:30	11	30	12046	Sandiacre	9/26	9/50	Ex 21 assisting: South end engine in rear									
3:55 Tibbs Kelly	44407	4:15	4:20	4:23	4:34	4:36	4:43	31	62	12045	Yard			Pushing 26, 23, 22									
10:50 Spl. Marlow	44036	4:15	4:30	4:33	4:50	4:52	4:58	13	36	12045	Yard			" 36									
7:38 Carlton	48412	4:10	4:40	4:48	5:0	5:2	5:6	13	36	12045	Sandiacre			" 36									
8:25 Wash	48152	4:35	4:47	4:48	5:10	5:12	5:17	18	55	12045	Sandiacre			" 36									
12:40 Staveley	48010	4:55	5:7	5:9	6:0	6:3	6:9	28	60	12045	Sandiacre			" 36									
3:30 Maptenley	43810	5:8	5:18	5:20	6:10	6:14	6:21	17	43	12046	Sandiacre			" 36									
12:30 Woodthorpe	47978	5:30	5:35	5:45	6:22	6:24	6:30	23	72	12046	Yard			" 36									
Lock Luge (Hill)	58169	—	6:35	6:40	6:36	6:37	6:40	1	23	58169	Sandiacre			" 36									
4:15 Heaton	48075	6:25	6:30	6:38	6:41	6:44	6:50	31	59	12046	Sandiacre			" 36									
6:50 Corral	58176	6:35	6:45	6:54	6:58	7:0	7:18	17	43	12045	Sandiacre			" 36									
ex Down side	4136	—	6:58	8:55	7:16	7:18	7:23	21	36	12045	Sandiacre			" 36									
3:0 Avenue	58146	6:50	7:6	7:10	7:26	7:28	7:33	17	27	12046	Sandiacre			" 36									
3:48 Hickory	43305	6:55	7:12	7:15	7:36	7:38	7:43	28	46	12045	Yard			" 36									
Spl Westcrows	48357	7:15	7:22	7:25	7:44	7:46	7:56	32	63	12046	Sandiacre			" 36									
5:20 Maptenley	43940	7:15	7:30	7:35	8:15	8:17	8:22	26	44	12046	Yard			" 36									
Various ex 21	12045/56	—	8:10	—	8:26	8:28	8:38	47	83	12045	Yard			" 36									
3:10 Roundwood	48756	7:29	7:55	8:0	8:41	8:43	8:53	15	55	12046	Yard			" 36									
Sandiacre shfr	47551	—	8:10	8:12	9:0	9:3	9:10	25	37	12045	Sandiacre			" 36									
6:20 Tibbs Kelly	48280	7:50	8:20	8:25	9:14	9:17	9:26	43	77	12045	Yard			" 36									
6:2 Sleight	48400	8:15	8:35	8:40	9:27	9:29	9:37	41	74	12046	Skip			" 36									
88 trip 5 Standton	44371	8:25	8:45	8:56	9	—	10/0 p.m.	—	—	—	—			" 36									
5:5 Shirebrook	48176	8:30	8:50	8:57	9:27	9:29	9:37	41	74	12046	Skip			" 36									
7:30 Langley M	58173	8:45	8:58	8:59	9:27	9:29	9:37	41	74	12046	Skip			" 36									
7:37 Swadwick	3817	9:5	9:25	9:40	9:27	9:29	9:37	41	74	12046	Skip			" 36									
HOURLY SUMMARY																							
HUMP ENGINES																							
Nos.																							
12045																							
12046																							
Total 26																							
BRABES																							
Trains 26																							
Stave -																							
Total 26																							
Cuts																							
2 3 76																							
3 4 143																							
4 5 98																							
5 6 31																							
6 7 100																							
7 8 115																							
8 9 86																							
9 10 109																							
TOTAL																							
758																							
1549																							
(Signed)																							

Fig. 15—Reproduction to approximately half size of an actual hump shunting record

bute to facilitate the work of the shunting staff and enable a high standard of efficiency to be achieved. The benefits are especially noticeable under adverse weather conditions.

Contractors

The main contractors concerned in carrying out the necessary works were as follows:—

Earthworks, drainage and main water services	En-Tout-Cas Co. Ltd
Railbrakes, route-setting, hump signalling and associated equipment	Metropolitan-Vickers-GRS. Limited
Reinforced-concrete control tower	Joshua Henshaw & Sons
Reinforced-concrete railbrake pits and subway, and wagon traverser foundations	G. F. Tomlinson & Sons Ltd.
Hump room building, staff accommodation, Civil Engineer's workshops, signalboxes, sub-station, weighbridge pit and office, cycle shelters, control tower finishes	Edward Wood & Co. Ltd.
Bridge over River Erewash	Fletcher & Co. (Contractors) Ltd.
Electric l.t. mains and lighting	C. A. Newton & Co. Ltd.
Electric h.t. distribution and sub-stations	East Midlands Electricity Board
Gas services and central heating	Maddock & Wright Limited
Fencing and gates	J. B. Corrie & Co. Ltd.
Loudspeaker equipment	General Electric Co. Ltd.
Wagon traverser	Cowans, Sheldon & Co. Ltd.
Wagon shop weighbridge	Henry Pooley & Son Ltd.

The principal sub-contractors employed were as follows:—

(By En-Tout-Cas Co. Ltd.)	
Earthworks	Shellabear Price Limited
(By Metropolitan-Vickers-GRS. Limited)	
Cables	British Insulated Callender's Cables Limited
Railbrakes	Francis Morton & Co. Ltd.
Air Hydraulic Accumulators	Davy & United Engineering Co. Ltd.
Pressure pumps	Hydraulic Engineering Co. Ltd.
Compressor	Hamworthy Engineering Co. Ltd.
(By Edward Wood & Co. Ltd.)	
Metal windows	Mellows & Co. Ltd.
Felt coverings to roofs	D. Anderson & Sons Ltd.
Mastic asphalt floor finishings	Scudamore & Luck Limited
(By C. A. Newton & Co. Ltd.)	
L.t. cables	Aberdare Cables Limited
L.t. switch and fuse gear	English Electric Co. Ltd.
(By East Midland Electricity Board)	
Transformers	Hackbridge & Hewitt Electric Co. Ltd.
Transformers	General Electric Co. Ltd.
H.t. switchgear	Switchgear & Cowans Limited
(By Cowans, Sheldon & Co., Ltd.)	
Motors	Lancashire Dynamo & Crypto Mfg. Limited.
Control gear	Allen West & Co. Ltd.
Worm reduction units	Alfred Wiseman & Co. Ltd.

A considerable amount of other work was involved in the reconstruction and modernisation and was carried out by British Railways departmental staff under the London Midland Region Civil, Mechanical & Electrical, and Signal & Telecommunications Engineers. On all other than purely technical engineering questions, the programme was co-ordinated through the Operating Superintendent for that Region, in conjunction with the extensive traffic re-adjustments which were necessary throughout the period.

In conclusion, a single line diagram is given in Fig. 16 showing the layout of lines, and the approximate position of the principal structures in the whole of the Toton area, together with gradient sections through the mechanised section of the Down as well as the Up yard, which gives a comprehensive idea of the size of Toton as a whole.

(Concluded)



Part of hump relay room



350-h.p. standard type diesel-electric shunting locomotive as used at Toton

THE COUNCIL OF INDUSTRIAL DESIGN.—The sixth annual report of the Council of Industrial Design covers the year up to March 31, 1951. The period was the culmination of three years' planning for the Festival of Britain, which absorbed the major part of the Council's staff and attention. Nevertheless, the Council's industrial officers were able to continue their long-term work of advice in industry and its designers received many requests from manufacturers. There was a steady demand for the Council's publications and nearly 6,500 photographic prints have been lent to the press.

SYNTHETIC RUBBER EXPERIMENTS.—Sir Clive Baillieu, Chairman of the Dunlop Rubber Co. Ltd., speaking at the annual dinner of the Institution of the Rubber Industry of which he is President, said that remarkable variations in the types of synthetic rubber were now in the experimental stage. However, while his company would co-operate in all practical measures to establish the manufacture of synthetic rubber in this country, they continued to place the highest importance on the assurance of supplies of natural rubber from Malaya and Indonesia which constituted the lifeline of the industry.

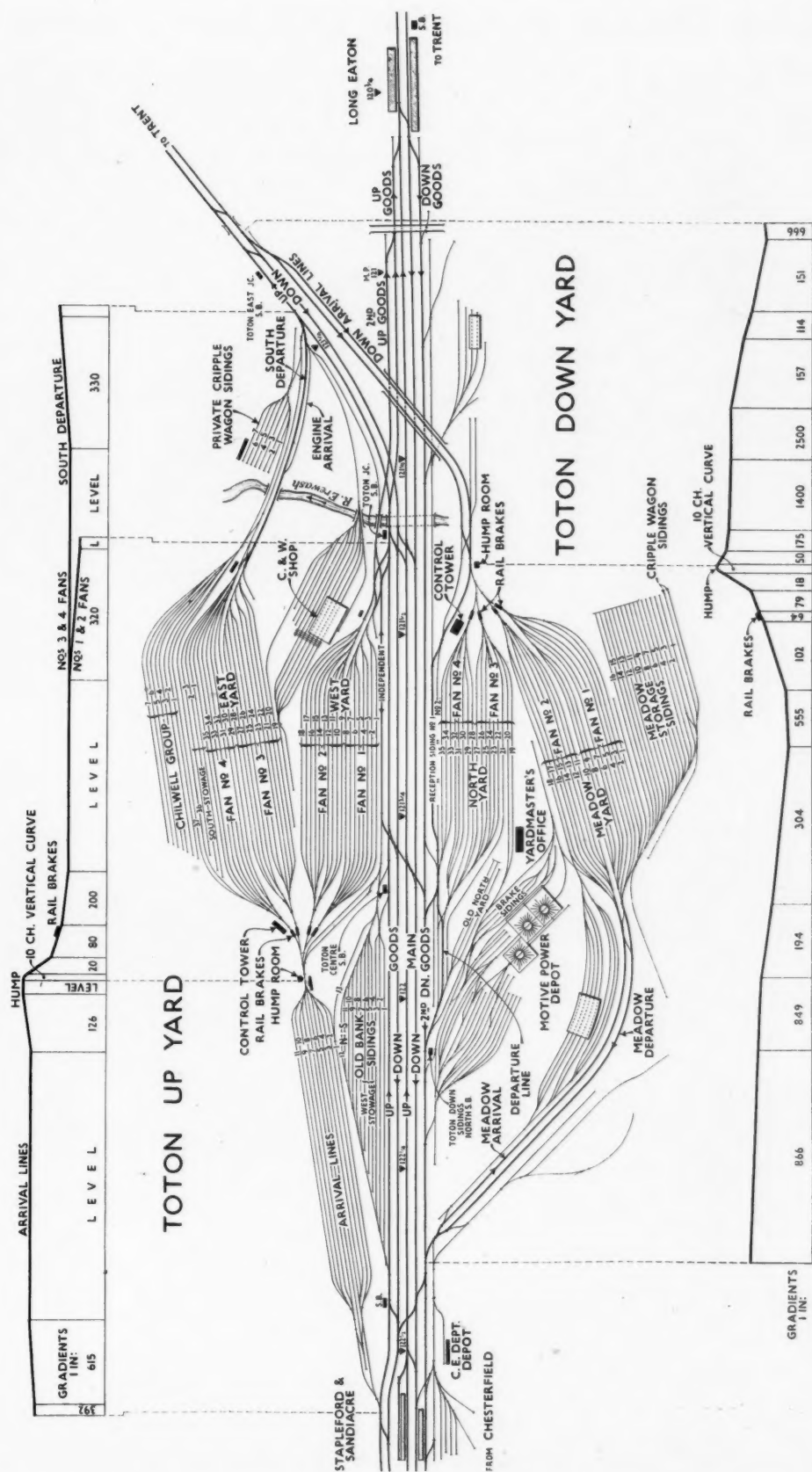


Fig. 16—Single line diagram showing layout of both Up and Down yards at Toton

Electric Traction on the New York Central System



New York Central System "Twentieth Century Limited" on the electrically-hauled section between Grand Central Station, New York, and Harmon. The locomotive is similar to that driven by General Sir Leslie Chasemore Hollis, Commandant General, Royal Marines, during his visit to the U.S.A. (see our November 30 issue)

Floodlights for South Wales Steelworks



Day and night views of 150-ft. towers for siding illumination at the Abbey Works of the Steel Company of Wales Limited. A battery of General Electric Co. Ltd. 1,000-W. and 500-W. floodlights is mounted on the guard rails of the top platform of each tower (see editorial article in this issue)

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RAILWAY NEWS SECTION

PERSONAL

Mr. P. J. Martin, Sales Manager, Brush Bagnall Traction Limited, has relinquished his position with that company to take up the position of Mechanical Engineer, Jamaica Government Railway, and will assume duty on February 1, 1952.

Mr. J. M. Garcia-Lomas, General Manager, Railways & Road Transport, in the

the Civil Engineering (Roads & Harbours) High School, and during his tenure at the Ministry of Public Works he has held the posts of President of the High Council of Railways & Road Transport, and President of State Railway Operation.

Mr. R. P. Biddle, Docks & Marine Manager, Southampton, British Railways, has been elected Chairman of the Southern section of the Institute of Transport.

Mr. Hugh Beck, London Office Manager of Crossley Brothers Ltd., has been appointed to a seat on the board of Directors.

Mr. H. H. Halliday, who, as recorded in our December 14 issue, has retired as Regional Staff Officer, Eastern Region, was educated at Easingwold Grammar School and entered the service of the former North Eastern Railway as a junior clerk



Mr. J. M. Garcia-Lomas
Appointed Manager of the Spanish
National Railways



Mr. H. H. Halliday
Regional Staff Officer, Eastern Region,
British Railways, 1948-51

Spanish Ministry of Public Works, who, as recorded in our November 23 issue, has been appointed Manager of the Spanish National Railways, joined the former Northern Railway of Spain in 1920. He was chiefly concerned with important electrification works carried out by the Northern Railway and became a member of the Electrification Committee in 1928. In 1932 Mr. Garcia-Lomas was appointed Chief Operating Engineer and he took up a similar position with the Spanish National Railways on the formation of that system in 1941. Shortly afterwards, he became Assistant Director of the National System. He was appointed Chief Engineer in the Government Delegation for Railway Transport Regulation in 1941, and General Manager, Railways & Road Transport, at the Ministry of Public Works in 1945. He was General Secretary of the Eleventh International Railway Congress at Madrid in 1930, and became a Member of the Permanent Committee of the Association. Mr. Garcia-Lomas is also a Professor at

Mr. T. H. Summerson, Chairman & Joint Managing Director, Summerson's Foundries Limited, has been elected Chairman of the British Steel Founders' Association.

Mr. John Long, formerly Assistant Manager of the London Office of Head, Wrightson & Co. Ltd., has been appointed London Manager, in succession to Mr. Selby Robson. Mr. Robson remains a Director of Head, Wrightson & Co. Ltd, and of Head Wrightson Processes Limited, resident in London.

Mr. Jacob Abdulnaby, formerly Sub-Manager, Baghdad office, Thos. Cook & Son Ltd., has been appointed Manager of the company's Haifa branch and Controller of the office at Jerusalem. He has been succeeded at Baghdad by Mr. Reginald Woodward, formerly head of the company's Basra office. Mr. George Cook has been appointed as Manager at the Thos. Cook & Son Ltd. Basra office.

in the Chief Goods Manager's Office, York, in 1903. In 1911 he was selected for a course of special training in traffic working and was transferred temporarily to the Operating Department, where he saw service at Tyne Dock, Middlesbrough, and other places. After being in charge of the Staff Section of the Goods and Passenger Departments for six years, he took control of an important section of the work in the General Manager's Office in 1922. At the grouping in 1923, Mr. Halliday was made responsible for salaried and clerical staff matters in the Office of the Chief General Manager, L.N.E.R., where in 1924 he took care of the wages staff. In 1932 he was appointed Principal Assistant (Staff) under Mr. Kenelm Kerr. He held this post until he was appointed Assistant General Manager (Staff) in 1946. At nationalisation he assumed the position of Regional Staff Officer, Eastern Region. Associated with the Railways Staff Conference for many years, Mr. Halliday assumed chairmanship of it in May this



Mr. Albert A. Gardiner

General Passenger Traffic Manager, Canadian National Railways, 1944-51

year. This position he has now relinquished, together with the chairmanship of other negotiating bodies dealing with railway staff. He is an Officer Brother of the Order of St. John and has served as a member of the Ambulance Committee of the St. John organisation.

Mr. Albert A. Gardiner, General Passenger Traffic Manager of the Canadian National Railways, who retired on December 23, was born in Somerset, England, in 1886. He was educated for the Indian Civil Service, but instead went to Canada and entered the service of the Grand Trunk Railway, 44 years ago. For five years he worked in Bonaventure Station as a clerk, a stenographer, and as Chief Clerk in the District Passenger Agent's Office. To a considerable acquaintance with passenger traffic problems he later added valuable general traffic experience while attached to the Vice-President's staff. As General Passenger Agent, Overseas Traffic, from 1926 to 1930, he exchanged information and ideas with transport personalities from all over the world, and accompanied many European dignitaries on tours of Canada. He was appointed Assistant General Passenger Traffic Manager in 1930, and General Passenger Traffic Manager in 1944. Mr. Gardiner was Secretary of the English-speaking sections of the Montreal civic committees for the Jubilee, the Coronation and the visit of the present King and Queen. In addition to being a Knight of St. Gregory and of Polonia Restituta (Poland), Mr. Gardiner has been recognised by the French Government.

Mr. James McChesney, Manager, Hyde Park Works, North British Locomotive Co. Ltd., whose death at the age of 55 we recorded briefly in our December 21 issue, served his apprenticeship in the Queens Park Works of the North British Locomotive Co. Ltd. Between the two world wars he served with Messrs. Sandberg, Consulting Engineers, and in 1942 returned to the North British Locomotive Co. Ltd. as Manager of the Hyde Park Works. During the first world war, Mr. McChesney served with the Royal Naval Air Service. He was a Member of the Institution of Locomotive Engineers.



Mr. Oswald A. Trudeau

Appointed General Passenger Traffic Manager, Canadian National Railways

Mr. Oswald A. Trudeau, Assistant General Passenger Traffic Manager, Canadian National Railways, who, as recorded in our December 14 issue, has been appointed General Passenger Traffic Manager, was born at Waterloo, Quebec, in 1888. He was educated at St. Bernadin's College and the Waterloo Academy, and joined the railway service in 1906. After holding various positions, Mr. Trudeau was appointed Assistant General Passenger Traffic Manager, C.N.R., in May, 1950. He has served as Provincial Vice-Chairman of the war savings stamps campaign and Vice-President of the Industrial Section, Canadian Red Cross Campaign.

We regret to record the death on December 19, at the age of 75, of Sir Francis Towle, C.B.E., son of the late Sir William Towle, Manager of the Midland Railway hotels from 1871 to 1914. Sir Francis Towle was Managing Director, Gordon Hotels Limited, 1921-36; President, International Hotel Alliance, 1935-38; and President, International Hotel Association, from 1946.

Mr. W. B. S. Miller, M.B.E., B.A. (Eng.) (Cantab.), Assistant District Engineer, Boston, Eastern Region, who, as recorded in our November 23 issue, has been appointed Assistant District Engineer, Doncaster, was educated at Haileybury College and Emmanuel College, Cambridge. He joined the service of the L.N.E.R. as a graduate pupil in 1933 and up to the outbreak of war was in the Area Engineer's Offices at York, Edinburgh and Kings Cross and the District Office at Staningley. Mobilised in August, 1939, he proceeded overseas with the 150th Railway Construction Company, R.E., in September, and served with this and other Railway Construction units throughout the war, commanding No. 1212 Railway C. & M. Group in Italy and late No. 3 Group in North West Europe. He was awarded the M.B.E. in 1943 for services in Italy, was demobilised in 1945 with the rank of Lt.-Colonel and returned to the Maintenance Section of the Civil Engineer's Office at Kings Cross. He was appointed as Chief Assistant (Maintenance) in 1947 and in 1949 became Assistant District Engineer, Boston.



Mr. L. J. Hamblin

Appointed District Operating Superintendent, Chester, Western Region

Mr. L. J. Hamblin, District Operating Superintendent, Worcester, Western Region, who, as recorded in our December 14 issue, has been appointed District Operating Superintendent, Chester, Western Region, entered the service of the Great Western Railway at Highbridge, Somerset, in 1924 and in 1927 transferred to the Divisional Superintendent's Office at Bristol. Early in 1929 he began a course of special training and in 1934 moved to the Office of the Superintendent of the Line at Paddington. He was appointed as Junior Assistant in the Divisional Superintendent's Office at Birmingham in January, 1938, and in August of the same year he became Chief Clerk to the Divisional Superintendent at Worcester. Three years later, Mr. Hamblin was appointed Assistant Divisional Superintendent at Cardiff, and remained there until 1942, when he moved to Paddington in a similar position. In January of this year he was appointed District Operating Superintendent, Worcester.

Mr. E. P. Hubbard has resigned from Brush Bagnall Traction Limited and has taken up an appointment in the Directorate of Fighting Vehicle Production, Ministry of Supply.

Mr. H. Bowen, retired Chief of Motive Power & Rolling Stock, Canadian Pacific Railway, was among the passengers aboard the *Empress of Canada* who were due to arrive at Liverpool on Saturday, December 22, from Saint John, New Brunswick.

Mr. James M. Symes, Vice-President, Operation, Pennsylvania Railroad, has been appointed Executive Vice-President, and has been succeeded as Vice-President, Operation, by Mr. James P. Newell. Assistant Vice-President, Operation, Mr. Walter W. Patchell has been appointed Vice-President, Real Estate & Taxation, in succession to Mr. Richard C. Morse, who has retired. The appointments are effective on January 1, 1952. The retirement has also been announced of Mr. Martin W. Clement, Chairman of the board of Directors, and Mr. George H. Pabst, Junior, Vice-President, Assistant to President.

Ministry of Transport Accident Report

Dalguise, Scottish Region, British Railways: August 1, 1951

Colonel D. McMullen, Inspecting Officer of Railways, Ministry of Transport, inquired into the accident which occurred at about 4.56 p.m. on August 1, 1951, at Dalguise, when the 4.10 p.m. passenger train, Perth to Blair Atholl, consisting of four coaches drawn by a Class "3" 4-4-0 engine, left the station without the train tablet for the section in advance, with the starting signal at danger, and met near the loop facing points an officers' special from Inverness to Glasgow, consisting of a saloon drawn by the same type of engine and running correctly under clear signals.

The combined speed of the trains was about 30 m.p.h. Eight passengers, three railway officers, the driver and guard of the special, and the guard of the passenger train were injured; five persons had to be detained in hospital. Both engines were heavily damaged, and the special pushed the other train back about 6 yd., the recoil breaking the couplings in front

Westinghouse on the engine and vacuum on the train, separately, as the combination valve was closed. He thought he had nearly stopped when the impact occurred.

The fireman did not mention to the driver that they had not been given the tablet on passing the signalbox, as he thought he had noticed that, and assumed it must have been given to him in the station. He also looked back as the train started, began firing, and did not see the signal. When he realised that there would be a collision and saw the fireman of the special jumping off, he did the same.

A ganger and two lengthmen were collecting tools just outside the up home signal. The ganger saw it lowered, and the special approaching; then he noticed the train leaving the station. He sent a lengthman to run towards it, and himself ran towards the special with hands held up. He was seen by its driver, a passed fireman, about the time when the home

failure, which he could only attribute to his attention being distracted by thinking about the schoolboys. The emergency application of the brakes by the driver and guard appears to have been made only just before the impact and the train to have been travelling a little over 10 m.p.h. when that occurred. It seems also that the Assistant to the Motive Power Superintendent underestimated the speed of the special at that moment. The combined speed of 30 m.p.h. is consistent with the damage to the engines.

The vacuum and Westinghouse brakes were being operated separately; on the passenger-train engine because the short pipe connecting the Westinghouse application valve to the combination fitting to the vacuum ejector had fractured and been blanked off with a farthing piece by a driver in July without the defect being reported; and on the other engine because the combination valve had seized. The

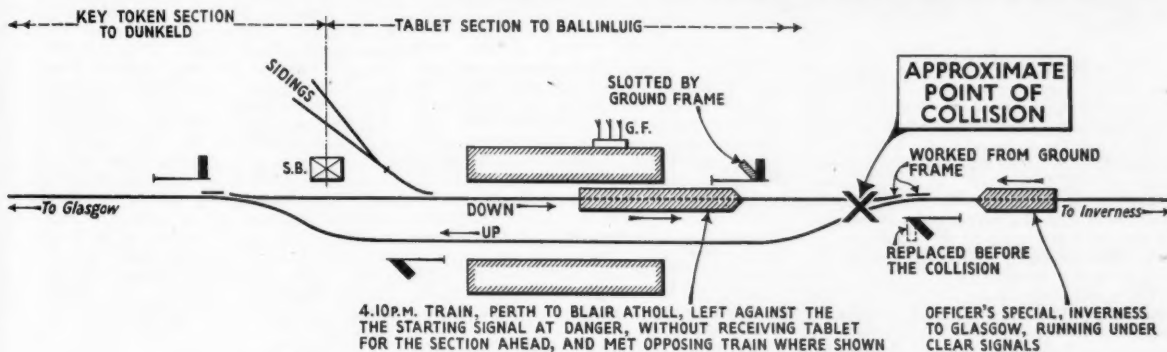


Diagram illustrating circumstances of collision at Dalguise, August 1, 1951

of the leading coach. All coaches were severely shaken and some frames distorted. The accompanying diagram shows the lines, signals, and other details essential to an understanding of the case.

Evidence

The passenger train was on time and stopped short of the connection to the down siding on arrival, as a horsebox had to be put off. After that was done the engine was recoupled and—with a porter riding on it—drew the train into the platform. The guard, who could not see the starting signal from where he was, gave the rightaway in about one minute; he noticed that the signal was at danger when about two coaches had passed it, and made an emergency brake application.

The driver, who gave his evidence in a straightforward manner and was much distressed over the accident, said he forgot altogether about the tablet and did not look at the signal, which he had not noticed as he arrived or when he drew forward. He was looking back to ensure that a party of about 70 schoolboys had closed all the doors. They had caused him some anxiety during the journey by frequently changing compartments at stations, as the guard confirmed, and he thought it was this which had distracted his attention and caused him to forget. When near the signal he saw it was at danger, closed the regulator and applied the brakes,

signal was replaced to danger, who made a full brake application and went into reverse gear. This driver thought he was travelling at about 15 to 20 m.p.h. when the collision occurred. His fireman had jumped off on realising it to be inevitable.

The Assistant to the Regional Motive Power Superintendent, on realising the position, went into the saloon to apply the brakes, but before he could do so felt the emergency application. He thought that speed on collision was reduced to about 10 m.p.h.

The signalman had obtained "line clear" for the special, and was leaving his box with the key token for the section in advance when he saw the down train starting, so he went back and threw the up home signal to danger.

The reversing levers were found on both engines to be in full back gear and vacuum handles in full application position, but the Regional Motive Power Superintendent, also travelling in the special, did not notice the position of the Westinghouse handles.

Inspecting Officer's Conclusions

The driver must accept full responsibility for the accident. He is 53 and has been driving for 20 years with a good record. He had had 16 hours' rest, was not tired or worried, and his health was proved to be good. He knew the road well and was questioned closely about his

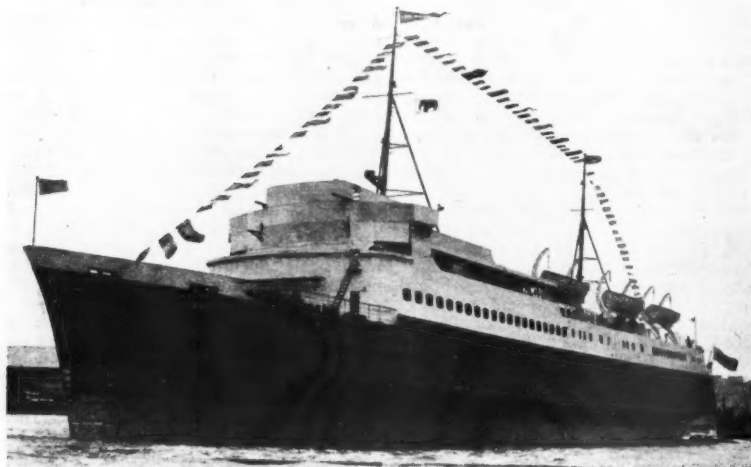
practice of working passenger trains with the Westinghouse brake on the engine and vacuum on the coaches with the combination valve closed is undesirable, and suitable notice has already been taken of this aspect of the case.

Remarks

This is the second occasion on which a passenger train has been involved in a head-on collision on single line since the serious accident at Abermule in 1921. The other occurred at Fishguard, in the Western Region, on July 11, 1951. Security on single lines depends to a large extent on drivers examining tokens before leaving stations and observing signals. These two serious lapses within three weeks of each other are in contrast with the high discipline generally maintained in single-line working and proved by the freedom from accidents of this kind over 30 years. Locking between starting signals and token instruments is a desirable safeguard, but lack of it on the down starting signal had no bearing on the accident. Trap points at that signal would have prevented it, but if considered necessary at Dalguise, logically they should be provided at a large number of stations of similar layout. Colonel McMullen does not consider that in the circumstances the expenditure would be justified, either in labour or material; both could be used to better advantage in other directions.

British Railways Car Ferry for Channel Service

Garage space for 120 vehicles which will be driven on and off the ship at Dover and Boulogne on loading ramps



A new vessel for the British Railways car ferry service between Dover and Boulogne was launched at Dumbarton on December 14 at the shipbuilding yard of William Denny & Bros. Ltd. This vessel, named *Lord Warden* by Mrs. John Elliot, wife of the Chairman of the Railway Executive, is the largest of its type to be built for British Railways, and will be used on the short sea route to the Continent via Dover and Boulogne. She will be ready for service in the Spring.

There is garage space for 120 cars, and also accommodation for 700 passengers. A feature of this service will be the new ramp terminal at Boulogne now under construction, which will enable motorists to drive directly on and off the ship and a similar ramp terminal is to be constructed at Dover which it is anticipated will be ready by 1953. The speed of the *Lord Warden* will be 20 knots and her length overall is 361 ft. 6 in. Her gross tonnage is 3,300.

The garage occupies practically the whole of the main deck. Steel doors are provided at the stern to allow cars to be driven directly on board over the loading ramps. At the forward end of the main deck will be a turntable enabling cars to be switched round and returned along one side of the garage ready to drive off. There is a clear deck height of 10 ft. 6 in. over the major portion of the garage, providing accommodation for motorcoaches, and at the aft end is a well in the promenade deck so that a number of double-deck buses can also be carried.

Passenger accommodation is arranged on the boat and promenade decks and includes a full range of public rooms and private cabins. The restaurant seats 140 people. Modern navigation equipment includes radar and an automatic sprinkler and fire alarm system.

At a luncheon after the launching ceremony the Chairman of the company, Sir Maurice Denny, proposing the toast of the new ferry, spoke of the co-operation between his company and British Railways and their predecessors, and said that the new steamer was the second of that name that Dumbarton had built for the channel service. The first was built in 1896 for the London Chatham & Dover Railway Company.

Mr. John Elliot, Chairman of the Railway Executive, replying, said that the former railway companies had been built up over many years of hard work, endeavour, and loyalty. British Railways, which had hardly begun the task which Parliament had put on them, were the proud inheritors of great traditions.

Mr. C. P. Hopkins, Chief Regional Officer, Southern Region, said that Dumbarton had built 52 ships for the railways, and referred to the unceasing research work undertaken by the builders, mentioning particularly the development of the Denny-Brown stabiliser.

Mr. R. P. Biddle, Docks & Marine Manager, Southampton, also spoke.

Western Region Bridge Demolition

The demolition by explosives of an over-bridge crossing the main line near Westbury (Wilts.) has been recently carried out by the Western Region with the co-operation of Imperial Chemical Industries, which supplied the explosives and supervised the placing and blowing of the charges.

The bridge, 16 ft. wide, was a three-span brick arch structure with a centre span of 27 ft. and two outer spans each 23 ft. with arches consisting of four rings of brickwork. The superstructure had previously been demolished by concrete breakers, leaving only the arch rings and piers to be demolished by explosives. Shot holes were bored by compressed air operated drills, and 85 lb. of Polar Ammon gelnite was used; each charge was connected to a ring main of Cordtex, which was initiated by plain detonator and safety fuse. The charges were placed in position during the afternoon before the demolition, and as a precaution, the Cordtex was covered by sandbags.

The work was carried out when the line between Patney & Chirton and Westbury was closed for blanketing operations. At the time of the explosion, 3.40 a.m. on a Sunday morning, the up line had been removed. The down line was protected by sleepers, under the bridge, for about 30 ft. on each side.

The demolition was entirely satisfactory. The piers were cut off cleanly at their bases and the outer arches at their springings. Débris covering the down line was first removed on to the up line by hand. The material was removed thence with the help of a dragline excavator on the site for the blanketing operation. The down line was re-opened for traffic by 6.30 a.m., less than three hours after the demolition, and the up line was clear by 9 a.m.

British Steel Founders' Association

At a dinner given recently by the British Steel Founders' Association at Claridges Hotel, London, W., attended by representatives of member firms and many of the leading figures in the engineering industry, the toast "British Industry" was proposed by Mr. Frank Rowe, Chairman, B.S.F.A. Sir Archibald Forbes, President, Federation of British Industries, responded. Among the guests were:—

Mr. R. J. Barclay, Chairman, Steelwork⁸ Plant Association; Mr. G. P. Barnett, H.M. Chief Inspector of Factories; Mr. George E. Beharrell, President, Society of Motor Manufacturers and Traders; Viscount Davidson, President, Engineering Industries Association; Mr. Colin Gresty, President, Institute of British Foundrymen; Mr. A. C. Hartley, President, Institution of Mechanical Engineers; Sir Andrew McCance, President, British Iron and Steel Research Association; Mr. W. Ralph Purnell, President, Mechanical Handling Engineers' Association; Sir Alexander Ramsay, Director, Engineering & Allied Employers' National Federation; Messrs. R. A. Riddles, Member, Railway Executive, British Railways; J. S. Tritton, President, Institution of Locomotive Engineers; and J. W. Vaughan, Director, Locomotive Manufacturers' Association.

Mr. Rowe said that the task of the present Government in getting the country back on its feet would entail heavy sacrifice—not the least from industry and industrialists—and these tasks would be lightened in proportion to the success attained in increasing the productivity of British industry. Conversely the highest endeavours of their technical skills would be abortive if the policies of the Government did not unswervingly seek to encourage the highest productivity.

Together, it was the duty of the Government and industry to persuade the mass of British people of one of the unalterable truths, namely, that without unselfish work and real endeavour from all, this country could never achieve those heights of prosperity and power which it should be their aim to deserve. Traditions of good sense and tolerance, steadiness and perseverance, were attributes waiting for sound political leadership to harness them in the service of national, rather than sectional, interests.

Mr. T. H. Summerson, Vice-Chairman, replying to the toast of "The Association," proposed by Lord Beveridge, said that the B.S.F.A. had done some very good work, and hoped to do even better yet. Their work in stimulating increased productivity had set an example to all industry. They had, despite many difficulties, set out to tackle the conquest of silicosis, and had established their own research organisation. They had so conducted their affairs, moreover, that the average rise in the price of steel castings over the last few years had been little more than half that of the Board of Trade index.

Electric and Diesel-Electric Traction Progress, 1951

Home and overseas orders for English Electric railway rolling stock and other equipment

During the past twelve months British manufacturers of electric and diesel-electric traction equipment have been kept busy meeting the requirements of railways at home and abroad. Important orders received by the English Electric Co. Ltd. in connection with railway electrification schemes included one for thirty-three 2,500/2,200 kW, 750/660 V, rectifier equipments for the Southern Region of British Railways. These are required to replace the former 25-cycle rotary converters installed in the Eastern Section, embracing Greenwich, Northfleet and West Wickham.

Fifteen 4,000-kW, 1,500-V, equipments have been ordered by the New South Wales Government Railways for the electrification of the Sydney-Lithgow line which handles heavy coal traffic over the long and severe gradients of the Blue Mountains. For the journey down into Sydney regenerative braking is used. Three further 1,224-kW, 1,530-V, equipments have been ordered by the Netherlands Railways to which 14 equipments have already been supplied.

For the London Midland Region of British Railways 25 350-h.p. diesel-electric shunting locomotives of a standard type have been ordered from this firm. For the Southern Region, orders included traction motors and control equipments for 109 600-V, d.c. motor coaches of the latest standard type, due for delivery in 1952.

The New Zealand Government Railways are taking 31 1,500-h.p. diesel-electric locomotives and the North Western Railway of Brazil 13 1,000-h.p. diesel units. Queensland Government Railways have ordered ten 1,500-h.p. diesel-electric locomotives and the Victorian Government Railways three 350-h.p. shunters. Four flameproof battery locomotives have been ordered by the National Coal Board and are the first of this type to be ordered for service in gaseous mines in this country.

Equipment Delivered

Locomotives and traction equipments delivered in 1951 included, for the Eastern and London Midland Regions, British Railways, fifteen 350-h.p. diesel-electric shunting locomotive equipments similar to those previously supplied to the L.M.R. and Southern Region. Up to November, 1951, a total of 12 complete 350-h.p. 0-6-0 type shunting locomotives and 224 locomotive sets of diesel and electrical equipment for these locomotives have been supplied to, or are on order for, British Railways.

For the Southern Region, British Railways, eleven 350-h.p. diesel-electric shunting locomotive equipments, together with traction motors and control equipments for 124 600-V, d.c. motor coaches of the latest standard type for suburban electric trains, were handed over. A total of 1,116 motor coach electrical equipments have been supplied to this Region and to the former Southern Railway or are on order at the present time.

Ten 800-h.p. five-coach diesel-electric express trains have been handed over to the Egyptian State Railways to operate a high-speed service between Cairo and Alexandria. This service involves a distance of 130 miles in 130 minutes with one intermediate stop. Nine generally similar five-coach trains, with accommodation for suburban service, are under construction, and eleven 400-h.p. three-coach trains are

also on order for these railways. The coachwork for all these trains is being built by the Birmingham Railway Carriage & Wagon Co. Ltd.

For the Indian Government Railways 32 lightweight 700-h.p. 1,500-V, d.c. motor coaches with English Electric traction motors and control equipment, and 32 trailer coaches, have recently been put into service on the former Great Indian Peninsular Railway to supplement 53 motor coaches incorporating English Electric equipment which have been in service since 1925-28. The new motor coaches were built by the Metropolitan-Cammell Carriage & Wagon Co. Ltd.

For the Netherlands Railways the first four of a further order for fifteen 400-h.p. 0-6-0 diesel-electric shunting locomotives were delivered. Ten similar locomotives were built last year for the same railways. For the New Zealand Government Railways, fifteen 660-h.p. Bo-Bo type diesel-electric locomotives, and seven 1,800-h.p. 1,500-V, d.c. mixed-traffic electric locomotives, were built. The diesel units are the first of this type to be supplied to New Zealand and the electric locomotives are the first of the articulated Bo-Bo type to be built in Britain. Their mechanical

parts were built by Robert Stephenson & Hawthorns Limited.

Ten 1,760-h.p. diesel-electric locomotives are now being put into service on the South Australian Government Railways and these are the first main-line diesel-electric units to go into regular service in South Australia. They are of the A1A-A1A type and are used for hauling heavy express passenger and freight trains over the Mount Lofty Mountains to accelerated schedules. The mechanical parts were constructed by the railway and the engines and electrical equipments by the English Electric Co. Ltd.

The Tasmanian Government Railways received a further eight 660-h.p. Bo-Bo type diesel-electric units. Out of the 32 locomotives of this type on order 22 have been completed. The mechanical parts were constructed by the Vulcan Foundry Limited. Thirteen 350-h.p. 0-6-0 type shunters have gone to Victoria.

There was a steady continuation in the demand from overseas for industrial and traction diesel engines. For use in diesel-electric locomotives ordered from the company 33 12-cylinder pressure-charged "V" type engines and generators are being supplied to the New Zealand Government Railways and eleven similar sets to the Queensland Railways.

Among types of switchgear delivered were a number of 66-kV, outdoor circuit breakers for the New South Wales Government Railways.

Blanketing Between Patney & Chirton and Westbury, Western Region

Blanketing of five separate sections of the up line, totalling 145 ch. and spread over a distance of ten miles between Westbury (Heywood Road Junction) and Patney & Chirton, on the main West of England

line of the Western Region, has recently been completed.

It was estimated that if the work was carried out under long weekend occupations it would take 22 weeks during which



Blanketing work in progress on the up side at Edington & Bratton Station

a severe speed restriction would have been necessary. In view of this the Operating Department agreed to close the line for four weeks and divert traffic except certain trains over the down line between 10 p.m. and 6 a.m. each night. This enabled the work to be carried out continuously with consequent saving in time and cost. British Railways staff was used for the work, and the plant was supplied and operated by a contractor.

The track bed was excavated to a depth of about 2 ft. 6 in. below sleeper level and the usual blanket of stonedust was then placed, followed by a layer of graded ballast. The track afterwards was relaid and lifted on ordinary top ballast. The excavated material was loaded into wagons standing on the down line, but the haul was short as a convenient unloading site near Westbury was used. New drainage was provided where possible during the progress of the work, but at some places it is being completed after the re-opening of the line to traffic.

Much of the work was carried out in bad weather which, apart from making conditions unpleasant for the men, caused flooding of the formation at some places, particularly between the platforms at Edington & Bratton.

Staff & Labour Matters

Railway Shopmen's Wage Claim

Further discussions took place on December 17 between representatives of the Railway Executive, the N.U.R. and Confederation of Shipbuilding & Engineering Unions on the railway shopmen's wage claim. The occasion was a meeting of the Railway Shopmen's National Council, on which representatives of both sides of the industry sit. As was the case at the previous meeting held on December 5, no decision was reached, and the meeting adjourned until December 20 to enable both sides to consider the position. The employees' side originally made application for a substantial pay increase, but in the light of the settlement made in the

outside engineering industry the demands have been modified to an increase of 11s. a week for adult males with appropriate adjustments for women and juniors.

Increased Pay for Gas Staffs

At a recent meeting of the National Joint Council for Gas Staffs, a claim was considered from the staff side for an increase in all salaries. Agreement was reached that graduated increases on existing nationally-agreed salary scales for males, ranging from £5 to £25 a year shall operate in respect of work performed as from January 1, 1952, and that 80 per cent. of the above increases shall apply to the existing salary scales for females.

Contracts & Tenders

A contract valued at £1½ million has been placed with Leyland Motors Limited by the British Road Services. The order is for 300 eight-wheel "Octopus" goods models, with a gross rating of 22 tons, and 100 four-wheel heavy-duty "Beaver" lorries.

The Board of Trade Special Register Information Service recently stated that the British Embassy at Bangkok has notified the Commercial Relations & Exports Department that the State Railways of Thailand have issued a call for tenders (No. 94100) for the supply of 40 metre gauge diplory trucks.

Tenders should reach the Chief of Stores Division, State Railways of Thailand, Bangkok, before 10 a.m. on January 28, 1952. A copy of the tender documents is available for inspection by representatives of United Kingdom manufacturers at the Board of Trade Commercial Relations & Exports Department. Five more copies are available for loan to United Kingdom manufacturers in order of written application to the Department; reference C.R.E.(IB) 77893/51.

A report from the Board of Trade Special Register Information Service states that a call for tenders (No. B.3808) has

been issued by the South African Railways for the supply of wheels and axles for B.22 wagons, according to specification No. CME.100/1951 and the specifications referred to therein, namely, CME.1/1950, CME.2/1950, CME.5/1940 and CME.5A/1940. The requirements are:—

4,000 solid wheels and axles 10 in. × 5 in. journals to drawings S.79/2/8855; S.1/2/10829; S.6/6/8855; S.35/7/8855

or alternatively

4,000 built-up type wheels and axles 10 in. × 5 in. journals to drawings S.79/2/8855; S.1/2/10829; S.2/6/8855; S.8/6/8855; S.36/5/8855; S.9700, Type "D"; CME.102/12848

The drawings may be inspected at the Office of the Chief Stores Superintendent, South African Railways, Johannesburg, and any S.A.R. Stores Superintendent. The drawings may also be inspected at the offices of the High Commissioner for the Union of South Africa, London, W.C.2. A copy of the tender document is available for inspection by United Kingdom manufacturers at the Board of Trade Commercial Relations & Exports Department. Tenders must reach the Chairman of the Tender Board before 9 a.m. on January 10, 1952.

Notes and News

Vacancies for Traction Motor Draughtsmen and Designer Draughtsmen.—Applications are invited for the posts of traction motor draughtsmen and designer draughtsmen required by manufacturers of diesel-electric locomotives. See Official Notices on page 727.

British Railways (Western Region) Ambulance Centre.—The half-yearly meeting of the District Ambulance Secretaries' Conference was held at Paddington recently, when the proceedings were opened by Mr. K. W. C. Grand, Chief Regional Officer, who is President of the Western Region Ambulance Centre. Mr. Grand, who was



Western Region District Ambulance Secretaries' Conference; standing (left to right) Messrs. P. Anstey, Regional Ambulance Secretary; K. W. C. Grand, Chief Regional Officer; R. Burgoyne, Regional Staff Officer and Chairman of the Western Region Ambulance Centre; and J. A. Martin, Assistant Secretary of the centre

welcomed by Mr. R. Burgoyne, Regional Staff Officer and Chairman of the Conference, expressed in an encouraging speech his keen appreciation of the valuable work which is being done by the District Secretaries. Mr. J. H. Cadwallader, District Secretary, Newport "B" District, responded on behalf of the District Secretaries.

Vickers-Armstrongs South Africa (Pty.) Limited.—Mr. D. W. Stanley will be Chairman of Vickers-Armstrongs South Africa (Pty.) Limited, not Chairman & Managing Director as stated in an earlier notice and recorded in our issue of December 14.

Rhodesia Railways Change of Address.—The Rhodesia Railways have now secured permanent offices at 241 Salisbury House, London Wall, London, E.C.2. The temporary premises at 11, Old Jewry, E.C.2, were closed on December 27 and the new office will open on December 31. The telephone number remains METropolitan 0661. The new telegraphic address is "Unusual, Ave, London."

Withdrawal of More South London Tram Routes.—On the night of January 5-6 the sixth stage of the South London tramway replacement scheme of London Transport will be carried out. Six more tram routes (48, 52, 54, 74, 78, and 5) will be replaced by six bus routes, which will follow the same routes, with some extensions. A total of 109 trams will be withdrawn, and 105 buses (excluding spares) will be introduced. Since the scheme began, 55 route miles of tramway have been abandoned, and 46½ route miles remain.

London Transport Tube Breakdowns.—An unusual occurrence caused a breakdown on three London Transport Executive tube lines, in one case for two hr., beginning about 6 p.m. on December 18. A defective train on the Piccadilly Line at Manor House set up a current surge, or current build-up, that affected trains on sections of three lines in the same sector of the London Transport power section, the Piccadilly, Northern, and Bakerloo Lines. Normal services were restored at 8.15 p.m. There were also separate delays on the Circle and District Lines, due to defective trains.

Bacon Traffic in the Eastern Region.—The recent outbreaks of foot and mouth disease have necessitated special arrangements being made by the Eastern Region of British Railways to ensure the regular flow of bacon pigs to the factories. The pigs have been concentrated and loaded at Peterborough for the Birmingham factories, and during the last three weeks a total of 600 wagons have been loaded, a special train being run each night. The pigs have been drawn from all the neighbouring counties, and on some days as many as 1,800 pigs have been despatched by rail, the total for the period being about 17,000 animals.

Christmas Services in the Southern Region.—More than 250 extra main-line trains were run between London and the Kent and South Coast resorts, and West of England, for holiday travellers on December 21 and 22, Christmas Eve, and December 27, and special through trains between Bournemouth and York ran on certain days. On Christmas Day, a skeleton Sunday service was run. Additional trains were run for racegoers to Kempton Park on Boxing Day, with cheap fare facilities to football matches on several days, including the South Africa

Rugby match at Twickenham. Certain Continental services did not run on Christmas Day.

Finsbury Park-Alexandra Palace Service.—From January 7 certain trains will be restored on the Finsbury Park-Alexandra Palace line, Eastern Region, from which the service was withdrawn on October 29 as a temporary measure.

Heenan & Froude Limited.—The consolidated balance-sheet of Heenan & Froude Limited for the year ended September 1 shows current assets of £1,943,000 (£1,766,000 for the preceding year), stock and work in progress being £1,150,000 (£1,038,000); sundry debtors £610,000 (£609,000); and cash £183,000 (£119,000). Current liabilities of £1,170,000 (£1,052,000) include sundry creditors for £618,000 (£400,000) and advance payments by customers on account of contracts on hand, £121,000 (£283,000).

British Railways London Commercial Service Christmas Party.—The London Commercial Service of British Railways held a Christmas party at the National Provincial Bank Buildings, Little Britain, London, E.C.1, on December 19, at 11 a.m. Some 300 guests were present, including representatives of leading commercial firms, and members of the staffs of the Railway Executive and the Regions. The proceedings were quite informal, and the gathering afforded an opportunity for the railway staff to meet some of their clients in a most enjoyable social atmosphere.

Ministry of Transport.—A recent report in *The London Gazette* stated that the Minister of Transport on December 13 made the following Statutory Instruments: the Railways (Additional Charges) (Amendment) (No. 2) Regulations, 1951 (S.I. 1951 No. 2194); the Harbours, Docks & Piers (Additional Charges) (Amendment) (No. 2) Regulations, 1951 (S.I. 1951 No. 2195); the Canals (Additional Charges) (Amendment) (No. 2) Regulations, 1951 (S.I. 1951 No. 2196). Copies may be obtained from H.M. Stationery Office, York House, Kingsway, London, W.C.2, price 2d. each.

Murex Limited.—The board of Murex Limited has declared an interim dividend of 6 per cent. for the year ending April 30, 1952, against 5 per cent. last year. In making this announcement the directors state that the fortuitous element contained in the profits of the previous financial year and which was appropriated to stock contingency reserve has continued in a less marked degree during the six months ended October 31. Disregarding fortuitous profits the trading results for the six months compare favourably with the rate of earnings for the previous financial year. The shortage of certain raw materials continues to affect ability to satisfy demands for products in full.

Lord Latham's Christmas Message to L.T.E. Staff.—In his Christmas message to the staff, the Chairman of the London Transport Executive, Lord Latham, stated that the year 1951 might well be known as the Festival Year, when the British people showed to the world, and to themselves, their achievements and their faith in themselves. London Transport staff could feel well satisfied with the contribution they had made to the success of the Festival, and the hundreds of thousands of visitors to London would have taken home lasting recollections which would add to the high reputation of London Transport through-

out the world. Praise was due as much to the "back room boys" who planned the special services, and the engineers and maintenance staff upon whose workmanship and reliability the safety of passengers depended as to those who came into daily personal contact with the many visitors to London.

British Columbia Electric Railway Co. Ltd.—Gross revenue from operations of the British Columbia Electric Railway Co. Ltd. for 1950 was \$38,945,511, compared with \$35,472,119. Expenditure was \$36,544,303 (\$33,150,496), leaving a balance of \$2,401,208 (\$2,321,622). After deduction for interest, dividends already announced, and other items, \$78,187 (\$200,970) remained to be carried forward.

London Transport Christmas Poster.—Lord Latham, Chairman of the London Transport Executive, has sent to the Chairman of the Oslo City Council a copy of the poster now being displayed throughout London—which is reproduced below—to



London Transport wishes you a Merry Christmas and a Happy New Year

convey seasonal greetings to London Transport passengers. The poster reproduces an artist's impression of the tree—the Christmas gift of Oslo to London—which can now be seen again in Trafalgar Square. In a covering letter Lord Latham said that the tree was chosen as the subject of the poster to express the deep appreciation of Londoners of the gesture of goodwill symbolised in this annual gift by the citizens of Oslo.

Footplate Broadcast.—The first "live" broadcast from the footplate of the engine of a British Railways express passenger train took place in the Children's Hour programme on December 15, when the B.B.C. Commentator, Mr. Raymond Baxter, travelled on the engine of the 1.22 p.m. Western Region train from Taunton to London. Mr. Baxter's commentary was given whilst the train was running between Reading and Paddington, and accompanying him in the train was Mr. Douglas Fleming, who gave his impression of the journey. Mr. Wynford Vaughan Thomas was at Paddington to see the train arrive and give a word picture of the scene. A special coach was

fitted with a roof aerial and transmitting equipment by the B.B.C. in conjunction with the Western Region.

Proposed Inter-City Helicopter Service.—British European Airways have invited leading aircraft firms to submit designs for a 45-seater helicopter for inter-city services of 50 to 250 miles at a cruising speed of not less than 250 m.p.h.

Stewarts and Lloyds of South Africa Limited.—The trading profit of Stewarts and Lloyds of South Africa Limited for the year to June 30 last was £936,881. After deduction for taxes of £253,077 and depreciation, £95,813, the net profit was £658,787. A total of £167,955 was carried forward.

Nitrate Railways Co. Ltd.—In the report for the year ended December 31, 1950, of the Nitrate Railways Co. Ltd., it is stated that no accounts could be prepared for the year because the Government of Chile took over the railways on September 1. Intricate questions of valuation have still to be settled between the Government and the company, and a joint commission is examining them. The sixty-ninth ordinary general meeting of the company was held in London on December 20.

Brown Bayley's Steel Works Limited.—The group profit of Brown Bayley's Steel Works for the year to July 31 last was £197,917 (£394,190), after taxes of £229,621 (£376,712). This includes the profit of the parent company for the period August 1, 1950, to January 7 last, from which date the steel business was transferred to Brown Bayley Steels Limited for the purpose of nationalisation. It also includes dividends received from the Hoffmann Manufacturing Company group, but no other profits of that group are included. The profit attributable to the holding company, after deduction of outside interests and profits to January, 1951, vesting in the Iron & Steel Corporation after providing for accrued dividend to February 14 last, was £120,574 (£391,150).

Hunslet Progress Report.—During the past year the locomotive output of the Hunslet Engine Co. Ltd. has continued at about 50 per cent. steam and 50 per cent. diesel. The latter includes a 500-h.p. diesel-mechanical unit which in dynamometer car tests on British Railways hauled mineral trains up to 1,047 tons over ruling grades of 1 in 133 and 435-ton trains up 1 in 48-50. Other deliveries were 204-h.p. diesels for local freight and shunting on the East African Railways & Harbours and a 300-h.p. heavy shunter for Rhodesia. Steam locomotive production included six 37-ton 0-6-0T engines for the Sudan and a third repeat order of six 65-ton 0-6-2T engines for Calcutta Port and 2-8-4T and 0-6-2T locomotives for narrow-gauge lines in the East.

Responsibility in Level Crossing Accident.—In the King's Bench Division recently the Railway Executive was held three-quarters responsible for a level-crossing accident which had caused the death of a man motoring over the crossing. The Judge held that the provision of uncontrolled gates on each side of the railway, although appropriate to an accommodation road such as the crossing might well have been in 1846 (when the Act was passed giving power to construct the railway), did not comply with later requirements. He held the deceased a quarter responsible. The engine driver was not at

fault. The Judge gave a reserved judgment on a claim for damages against the Railway Executive brought by the executors of the deceased, entered judgment for three-quarters of assessed damages, with costs, and agreed to a stay of execution in the event of an appeal.

Institute of Transport.—At a meeting of the Institute of Transport to be held at the Jarvis Hall (R.I.B.A.), 66, Portland Place, W.1, at 5.45 p.m. on January 14, Mr. A. J. Pearson will read a paper on "Developments and Prospects in British Transport, with Special Reference to Railways."

Scottish Station Christmas Decorations.—Seven of the principal stations in Scotland (Aberdeen, Dundee West, Edinburgh (Waverley and Princes Street) and Glasgow (Central, Queen Street and St. Enoch) include Christmas tree displays, in aid of charitable organisations.

Western Region London Lecture & Debating Society.—Mr. H. R. Webb, Stores Superintendent, Western Region, will read a paper on "Modern Methods of Store-keeping" at a meeting of British Railways, Western Region, London Lecture & Debating Society, to be held in the Clerks' Dining Club, Bishops Bridge Road, W.2, at 5.45 p.m. on January 17.

British Railways Standard Uniforms.—In an editorial note in our issue of December 14, when referring to the new standard uniforms to be issued to British Railways staff in the near future, it was stated that there had been a big reduction in the different qualities of cloth required for the uniforms. This should have read "reduction in the number of different qualities" in that only 13 qualities will be needed as compared with 38 as at present.

Renovation of Charing Cross Hotel.—War damage at Charing Cross Hotel is being made good, and many rooms are being modernised. Five storeys on the Strand frontage and two on the roof are also receiving attention. The hotel, one of the first large hotels in London, and the station were built on the site of Hungerford Market between 1860 and 1865. The designer was Edward H. Barry, who also designed the copy of the Eleanor Cross in the forecourt. The cross has been recently cleaned and restored.

Permanent Way Institution, Irish Section.—The fifth winter meeting of the Permanent Way Institution (Irish Section) was held at the C.I.E. Club, Earle Place, Dublin, on December 7. A record number of 140 members and 20 visitors was present. Mr. A. M. Plumer, District Engineer, C.I.E., Dublin, was in the chair. Mr. T. R. Leonard was unanimously nominated Vice-President for Ireland. Slides taken during the Permanent Way Institution Convention in Holland were shown, with a commentary. It was announced that the 72 Irish members who had attended the Convention had, as a token of their appreciation of the hospitality and kindness shown them, contributed to a presentation to the President and Chief Engineer of the Netherlands Railways. A paper was read by Mr. N. J. MacLeod, lecturer at the British Railways School of Transport, Derby, on "Formation and Drainage." After showing the effects of lack of drainage and of loads on clay formation, he described the methods used to blanket the track, using the most up-to-date machinery. The Irish Section of the Insti-

tution has had a most successful year and membership now exceeds 350. Next year, joint meetings have been arranged with the Nottingham & Derby Section in Dublin in April, and with the London Section in London in September. The Convention will be held in Ipswich in June, and there will be the usual local meetings. It is also planned to start evening lecture courses in Dublin and Belfast in January.

Christmas Trees at North Eastern Region Stations.—Christmas trees, some including collection schemes for local charities, are again a feature at North Eastern Region stations, including York, Hull, Scarborough, Middlesbrough, Harrogate, Bradford, Huddersfield, Wakefield, Halifax, Leeds, Newcastle, Darlington, South Shields, Tynemouth, and West Hartlepool. Over the whole of the North Eastern Region in the past 16 years Christmas trees have resulted in £32,106 16s. 4d., and 77,818 gift parcels, books and toys being collected for hospitals, institutions, and children's homes.

New Suburban Electric Train.—The Southern Region recently began trials with a 1951-type prototype suburban electric train set between Wimbledon and Waterloo. The four-car set, which is numbered 5001, is similar to the rebuilt units with recovered underframes and bogies, but has the standard automatic coupler. The cab has been redesigned with doors leading from the brake compartment and has no side doors.

Steel Denationalisation and the T.U.C.—As a reply to a request by the Minister of Supply for views on steel nationalisation, it was decided last week at a meeting of the Trades Union Congress General Council "to inform the Minister that the T.U.C. was unable to offer detailed comments on the proposal in the absence of some clearer indication of the Government's own intentions, but the General Council would be willing to give further consideration to the matter if and when the Minister is able to give them some positive information about the Government's proposals."

Renold & Coventry Chain Co. Ltd.—Ordinary stockholders of the Renold & Coventry Chain Co. Ltd. are to be given opportunity to subscribe for cash by way of rights for 377,105 new ordinary shares of £1 each in proportion of one new ordinary share for every complete £3 of ordinary stock held. It is expected that these new shares will be issued at about 50s. a share. It is also proposed to capitalise £905,049 of various reserves to be applied in paying up 905,049 further new ordinary shares of £1 each for distribution in March next to ordinary stockholders.

I.C.C. and Inflation.—The international danger of inflation was one of the principal subjects discussed at the recent meeting in Paris of the Council of the International Chamber of Commerce attended by delegates from 24 countries, including the United Kingdom. Mr. J. L. S. Steel, Chairman of the British National Committee of the I.C.C., and a Director of Imperial Chemical Industries Limited, stressed the need for a policy of controlled deflation, provided that it should not be carried so far as to cause widespread unemployment. "It is not," said Mr. Steel, "a policy intended to produce unemployment, but rather to reduce that over-full employment which is reflected, at any rate in some countries, by a state of affairs in which there are far more jobs available

OFFICIAL NOTICES

JUNIOR CONTRACTS ENGINEER required by manufacturers of diesel-electric locomotives. Applicants should be between the ages of 22 and 30, with technical training to graduate I.E.E. or I.Mech.E. standard and preferably practical experience of an apprenticeship with Manufacturers of diesel-electric traction equipment. The post will involve the commercial and general technical aspects of diesel-electric locomotive manufacture and it will be an advantage if applicants possess previous contracts experience of this nature. Excellent prospects for man with personality and ambition. Applications in confidence to Box 309, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

LOCOMOTIVE, Carriage and Wagon Senior Draughtsman, 30/35 years of age. Qualifications: Must have served a full general apprenticeship in an engineering workshop (preferably railway) and have had at least five years Drawing Office experience with some time in an executive capacity. A knowledge of Spanish an advantage. Future prospects. Apply to the Secretary, **PERUVIAN CORPORATION LTD.**, 144, Leadenhall Street, London, E.C.3.

JUNIOR TRAFFIC OFFICIALS with railway traffic apprenticeship experience. Age about 25, single, required for service on railways in Peru and Bolivia. Apply to the Secretary of the **PERUVIAN CORPORATION LIMITED**, 144, Leadenhall Street, London, E.C.3.

GLOSSARY OF WOOD. A technical dictionary for all associated with timber and its uses. Ten thousand terms about timber—the common and the little known, the old and the new. Ten thousand definitions covering the entire field of timber and its uses—growth, marketing, utilisation. The commercial timbers, their qualities and uses, tools and wood-working equipment, are all here explained simply, concisely and accurately. Illustrated by many clear line drawings. Price 21s. net. By post 21s. 9d. Tothill Press Limited, 33, Tothill Street, London, S.W.1.

JUST PUBLISHED.—Twenty-Five Years of the North Eastern Railway, 1898-1922. By R. Bell. C.B.E., Assistant General Manager, N.E.R. and L.N.E.R. Companies, 1922-1943. Full cloth. Cr. 8vo. 87 pages. 10s. 6d.—*The Railway Gazette*, 33, Tothill Street, London, S.W.1.

TRACTION Motor Draughtsmen and Designer Draughtsmen required by manufacturers of diesel electric locomotives. A sound knowledge of the mechanical as well as the electrical design of traction motors is essential and applicants should have a wide experience of modern design and production methods in this class of work. Good salaries will be paid to men having these qualifications and special consideration will be given to other problems connected with the engagement of Senior Staff. Three years' agreement and every facility to find suitable living accommodation will be given. Please apply giving full details of training, experience, age, etc., to Box 322, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

INTERNATIONAL RAILWAY ASSOCIATIONS. Notes on the work of the various associations concerned with International traffic, principally on the European Continent. 2s. By post 2s. 2d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25s. per volume, post free. Send your copies to the **SUBSCRIPTION DEPARTMENT**, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

than men seeking jobs." Of the essential part which increased production must play in combating inflation. Mr. Steel stated that "in spite of many handicaps, industry in general in the Western countries has tackled the problem of increasing production with striking success." Mr. Steel mentioned the importance of modern techniques of work and method-study and strongly advocated the extension of method-study, job-analysis and training of supervisory staff. Speaking of the difficulties facing the manufacturer in his attempts to increase production, he called for practical steps to deal with shortages of finance, manpower, and raw materials.

British Industries Fair, 1952.—The thirty-first British Industries Fair will open simultaneously in London and Birmingham on May 5, 1952. In a statement on the Fair, Mr. Peter Thorneycroft, President

of the Board of Trade, said that there were many novelties promised, as manufacturers often used the Fair to show for the first time the results of their research and development in the preceding year. Special attention was being given to the needs of export industry, as the B.I.F. was a focal point of the country's export trade.

N.C.B. Results for Third Quarter.—The National Coal Board statistical statement for the third quarter of 1951 states that the estimated deficit on revenue account was £868,497, compared with a surplus for the second quarter of £3,105,145 and a deficit for the third quarter of last year of £460,524. Total profits (before charging interest) amounted to £3,586,503, against £8,855,145 for the previous quarter and £3,459,476 for the corresponding quarter of 1950. Production costs showed a further rise to 49s. 7-4d. per saleable ton,

against 48s. 1-5d. in the second quarter. Saleable output at 48,311,315 tons was less than in the second quarter (53,184,852), but up on the corresponding quarter of last year, when the figure was 46,943,609.

Tube Investments, Limited.—At the thirty-second annual general meeting of Tube Investments Limited in Birmingham on December 12, the Chairman (Mr. Ivan Stedeford) reported another record year in production, sales, exports, productivity and profits. Each of the five divisions was feeling increasingly the effects of material shortages. The shut-down of tube steel imports threatened a grave situation, and there was so far no news of supplies to make good anything like the deficiencies. It was hoped that British steelmakers would see to it that tube steel featured more prominently in future production plans. Overseas investments were showing

Diesel Locomotive on a Trial Run in Freight Service



Diesel-mechanical 55-ton 500-h.p. locomotive built by the Hunslet Engine Co. Ltd., pulling out of Stourton Down Yard on a test run with a 36-wagon train of 620 tons

a promising return. The £10,000,000 home development programme was going forward satisfactorily, and would become effective by stages during the next few years.

Railcars for West Clare Line, C.I.E.—

The power units of the four railcars which A. C. V. Limited is building for the narrow-gauge West Clare line of C.I.E. have been received, and the coachwork is almost completed. The railcars are expected to go into service within the next few weeks.

Argentine Credit for Bolivian Railway.—

The Government of Argentina has authorised a credit of 36,000,000 pesos to the Bolivian Government to enable it to continue during 1952 construction of the Yacuiba-Santa Cruz and Sucre-Boyubie lines, which were referred to in our September 2, 1949, issue.

Advance Payments to British Railway Employees in Argentina.—

Some time ago the Staff Committee of British subjects employed by the Argentine railways requested the British Government to advance money to British railwaymen retiring on pension and returning to England, against eventual repayment on the granting of their pensions. The British Government has signified that it cannot accept liability for financial problems of British railwaymen abroad. Its decision has been communicated by the Embassy in Buenos Aires to the committee.

Forthcoming Meetings

December 28 (Fri.).—Royal Society of Arts, John Adam Street, Adelphi, London, W.C.2, at 2.30 p.m. Dr. Mann Juvenile Lecture: "The Romance of the Railways," by Mr. C. Hamilton Ellis.

January 2 (Wed.).—British Railways, Southern Region, Lecture & Debating Society, in the Clerical Staff Dining Club, Waterloo Station, at 7 p.m. Reunion evening.

January 3 (Thu.).—British Railways, Western Region, London Lecture & Debating Society, in the Clerks' Dining Club, Bishops Bridge Road, W.2, at 5.45 p.m. "The Working of Special Traffic by Passenger Train," by Mr. R. J. Hill.

January 3 (Thu.).—Institute of Metals, at the University, Edgbaston, Birmingham, 15, at 2.30 p.m. Informal discussion on "Tool and Die Materials for the Extrusion of Non-ferrous Metals and Alloys."

January 3 (Thu.).—British Railways, Southern Region, Lecture & Debating Society, at the Chapter House, St. Thomas Street, S.E.1, at 5.45 p.m. "Some notes on Current Collection Systems for Electric Traction," by Mr. H. H. Swift, Mechanical & Electrical Engineer.

January 4 (Fri.).—Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W.1, at 5.30 p.m. "Some Considerations on Bogie Design with Particular Reference to Electric Railways," by Mr. W. S. Graff-Baker, Chief Mechanical Engineer (Railways), London Transport Executive.

January 5 (Sat.).—Electric Railway Society, at the Fred Tallant Hall, Drummond Street, N.W.1, at 3 p.m. "A Pictorial Survey of the Electric Railways of Holland and Belgium," by Mr. G. W. Morant.

Railway Stock Market

Stock markets are closing the year on a more hopeful note after their recent display of falling prices and uncertainty when War Loan 3½ per cent. and the long-dated nationalisation stocks fell to new low levels before a partial recovery. The prevailing belief is that for some time to come the trend in British Funds will govern general conditions in markets. Gilt-edged prices recently fell to a level which fully discounted the possibility of a 3 per cent. Bank rate; and now the prevailing view is that the 2½ per cent. Bank rate is likely to rule for some time.

By restricting credit facilities for non-essential purposes, with the higher cost of borrowing from the banks and the new instructions to the Capital Issues Committee, important steps have been taken to restrict inflation. There is no doubt that they hit industry to some extent as well as stock markets, and the investor has seen the value of his securities fall sharply in recent weeks. Nevertheless, the fall in market values appeared to have been carried too far; and 1951 is closing with a moderate rally, although this has been caused more by the end of recent selling than by a revival of buying.

The next few months may very well remain a period of uncertainty. There is the possibility that after all a further Bank rate increase may be necessary if inflation is not checked; and there is no doubt that many industries are meeting growing competition in export markets, particularly from Japan and Germany, and the rearmament drive in many respects is still in its early stage. During 1952, there will probably be increased shortages of materials for many industries not connected with rearmament or export trade. Because of higher costs, many companies require more capital, particularly as the banks are tightening up on credit facilities. Some may have to restrict activities or postpone expansion plans unless the Capital Issues Committee grant them permission to raise more capital.

The process of adjustment in markets which has been in evidence since the new Government's dearer money policy and the raising of the Bank rate to 2½ per cent., has not probably been completed. At the moment, it is contended in the market that British Funds have fallen too far, and that many industrial shares may be too high

in price unless higher dividends are in prospect. Dividend prospects may turn in many cases on the basis on which E.P.T. is to be calculated, and this may not be announced until the Budget next April, though it is scheduled to come into force on January 1.

If this proves the case, there may be much uncertainty regarding industrial and other equity shares, and the rally in British Funds may continue. If the drive against inflation succeeds, it should benefit British Funds and first class investment securities. War Loan 3½ per cent. can be redeemed in 1952, but this is not expected because of the large amount of this stock outstanding. On the other hand, a big rearmament loan next year is a possibility, according to current City views.

The outstanding railway stock in 1951 has been Canadian Pacific, which during the year have touched the record level of \$77. Lowest price in the year was \$43½. In 1950 the highest and lowest levels were \$45½ and \$26½ respectively. The big rise in price reflects the uptrend in dollar stocks generally, and in Canadian securities in particular owing to the increasing prosperity of the Dominion and the important Alberta oil discoveries. At their current prices "Canpacs" yield only 3½ per cent. on the basis of their 6 per cent. dividend; but the market is intrigued by the big potentialities of many of the company's assets and investments, which, it is assumed, will mean a bigger return of some kind for shareholders in due course.

Buying of Antofagasta stocks has also been a feature in 1951. The preference stock has come up during the year from 41½ to over 80, and the ordinary from 6 to over 20. Current prices for the preference and ordinary are below best at 70 and 17 respectively, but they have remained an active feature. The market realises there are large arrears of preference dividend but believes that increased progress will be made in paying these off, or that alternatively, there might be a scheme for funding the arrears.

Leopoldina stocks have closed the year firmly now that Brazil has released the compensation money, which means that the way is cleared for making the payments on the various stocks, as soon as legal and other formalities permit. The market remains hopeful that total payments on both preference and ordinary stocks may be above current prices.

Traffic Table of Overseas and Foreign Railways

	Railway	Miles open	Week ended	Traffics for week		No. of week	Aggregate traffics to date			
				Total this year	Inc. or dec. compared with 1949/50		Total	Increase or decrease		
							1950/51			
South & Cen. America	Antofagasta ...	811	7.12.51	£ 162,290	+	£ 72,410	49	£ 6,078,860	+	£ 2,693,956
	Costa Rica ...	281	Oct., 1951	cl.244,055	+	cl.228,863	18	cl.9,947,302	+	cl.86,239
	Dorada ...	70	Oct., 1951	36,894	—	515	43	361,117	—	30,116
	Inter. Ctl. Amer. ...	794	Oct., 1951	\$992,854	—	\$18,705	43	\$10,938,552	—	\$262,880
	Paraguay Cent. ...	274	7.12.51	£393,750	+	£114,396	23	£7,758,013	+	£3,117,701
	Peru Corp. ...	1,050	Nov., 1951	\$7,902,000	+	\$325,000	22	\$40,800,000	+	\$2,017,000
	„ (Bolivian Section)	66	Nov., 1951	Bs.16,086,000	+	Bs.2,474,000	22	Bs.75,805,000	+	Bs.19,219,000
	Salvador ...	100	Oct., 1951	cl.14,000	+	cl.27,000	18	cl.495,000	+	cl.140,000
	Taltal ...	147	Nov., 1951	\$2,177,000	+	\$155,600	22	\$10,120,000	+	\$2,298,300
	Canada	Canadian National†	23,473	Oct., 1951	18,728,000	+	664,000	43	172,143,000	+
Canadian Pacific...		17,037	Oct., 1951	13,467,000	+	1,218,000	43	1,218,000	+	15,250,000
Various	Barsi Light* ...	167	Nov., 1951	37,957	+	6,607	33	284,050	+	48,667
	Egyptian Delta ...	607	10.4.51	17,513	—	267	4	17,513	—	267
	Gold Coast ...	536	Aug., 1951	220,509	+	16,972	21	1,280,126	+	109,832
	Mid. of W. Australia	277	Sep., 1951	62,508	+	23,733	13	169,894	+	59,039
	South Africa ...	13,398	17.11.51	2,047,859	+	225,135	33	62,860,503	+	7,164,104
	Victoria ...	4,744	Aug., 1951	1,931,917	+	45,412	9	—	—	—

* Receipts are calculated at 1s. 6d. to the rupee

† Calculated at \$3 to £1

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